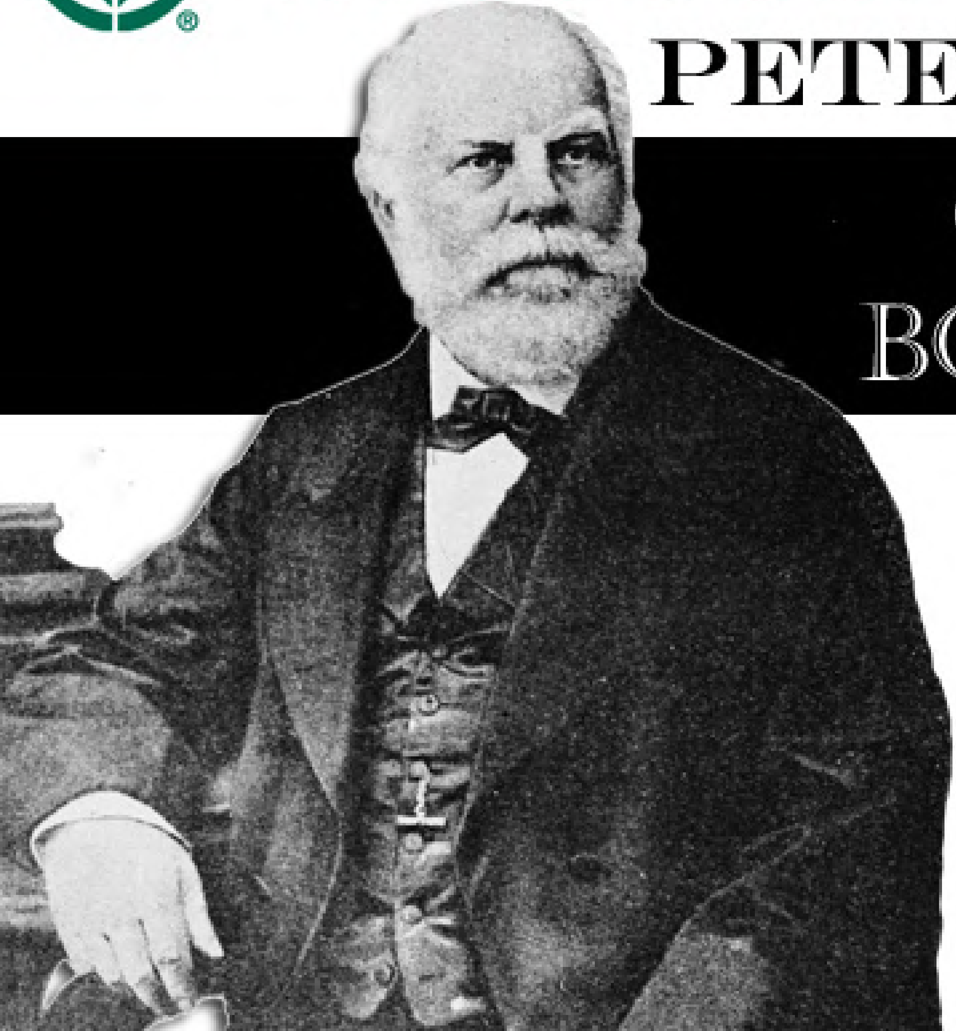
MISSOURI BOTANICAL GARDEN

PETER H. RAVEN LIBRARY

GEORGE ENGELMANN BOTANICAL NOTEBOOKS



Pagination Note:
Since many of the items lack a specific page number, the page number displayed online refers to the sequentially created number each item was given upon cataloging the materials.

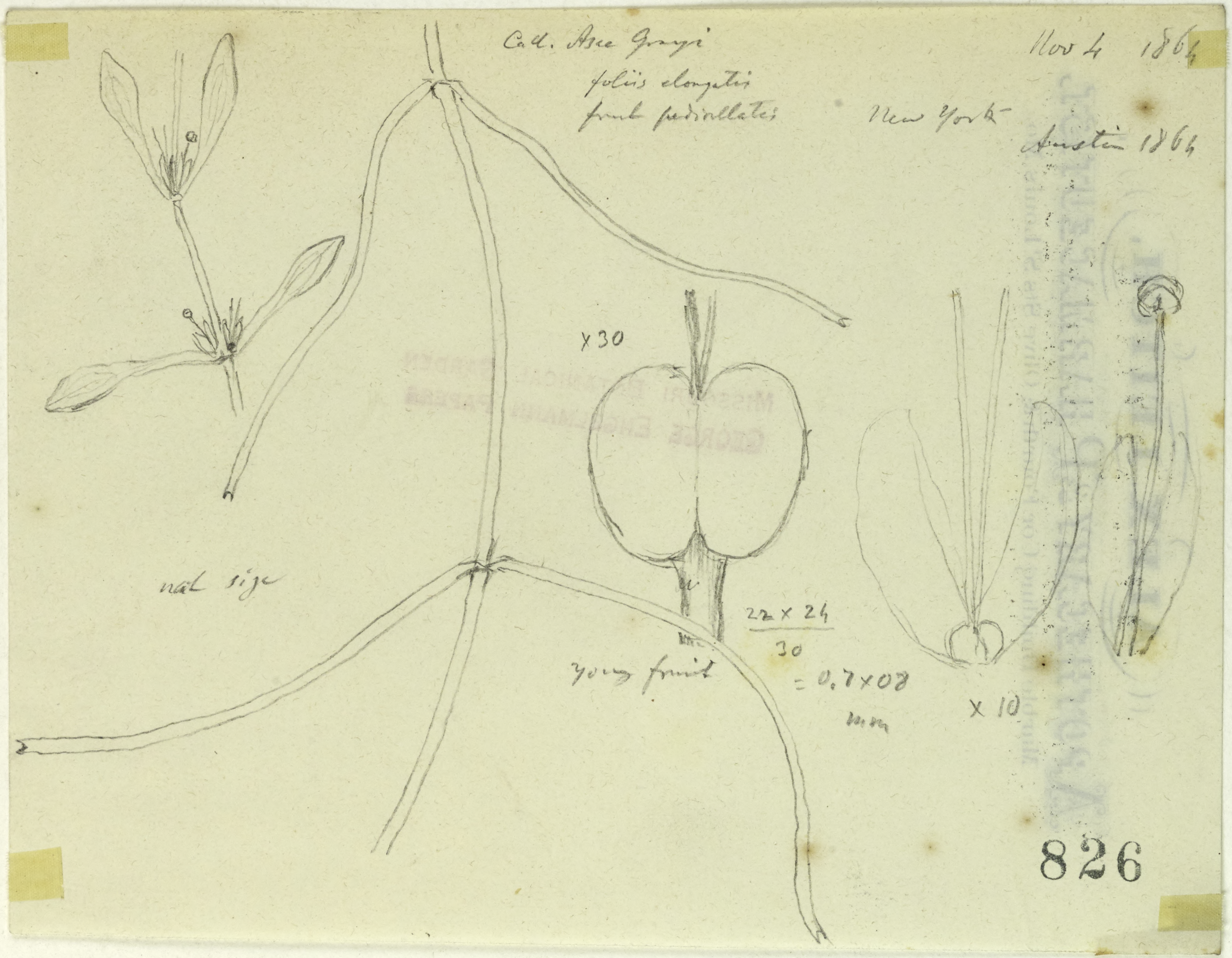
SHOUT
SHARE
IT

Call. Asae Grayi
foliis elongatis
fruct pedicellatis

Nov 4 1864

New York

Austin 1864


x 30
nat size
young fruit
22 x 24
30
= 0.7 x 08
mm
x 10

826

0 1 2 3 4 5 6 7 8 9 10
cm
copyright reserved
MISSOURI
BOTANICAL
GARDEN

ALEX. LEITCH,
APOTHECARY & PHARMACEUTIST,
Marble Building Cor. Fourth & Olive Sts. St. Louis, Mo.

0 1 2 3 4 5 6 7 8 9 10
cm
copyright reserved
MISSOURI
BOTANICAL
GARDEN

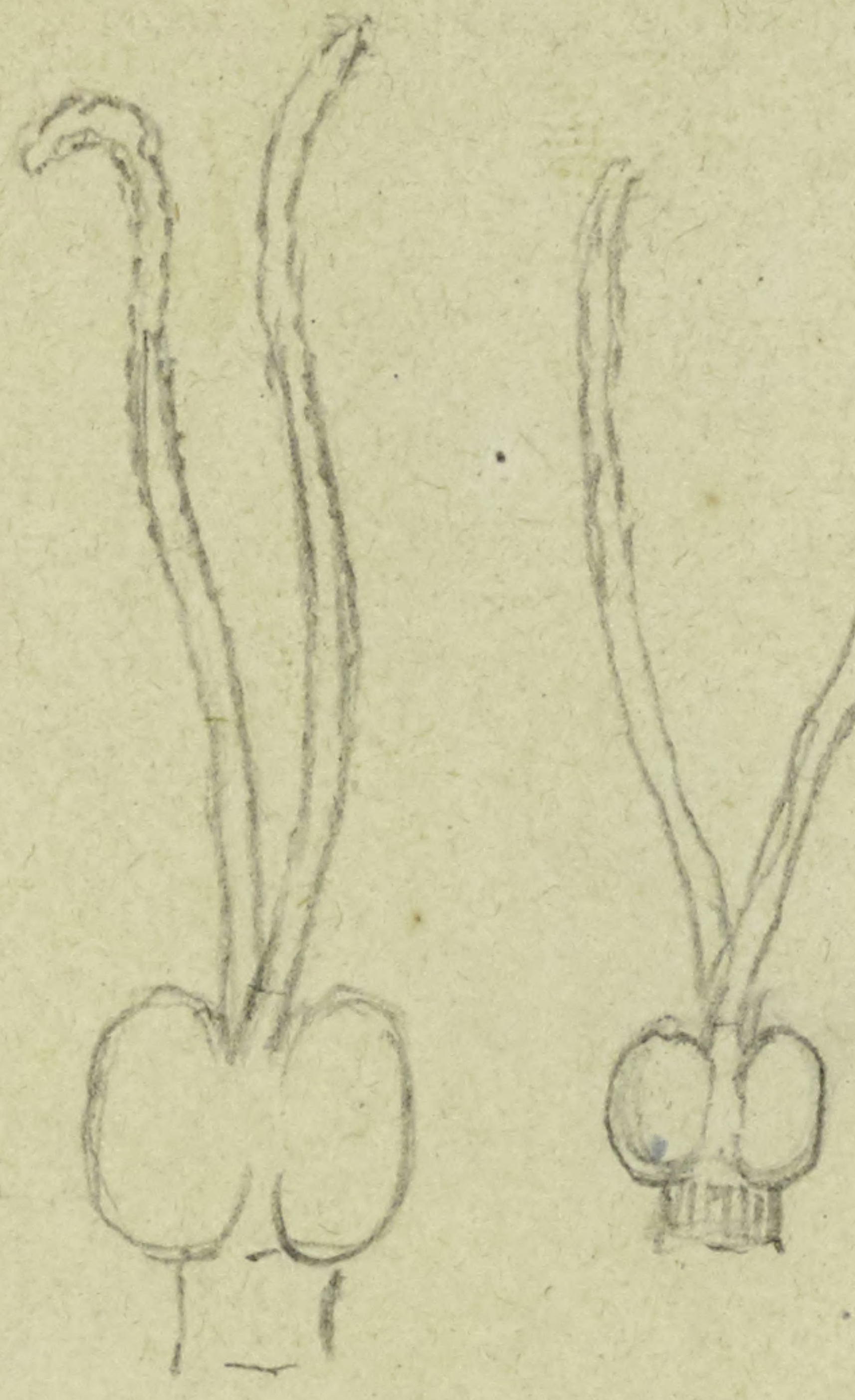
Callitriche

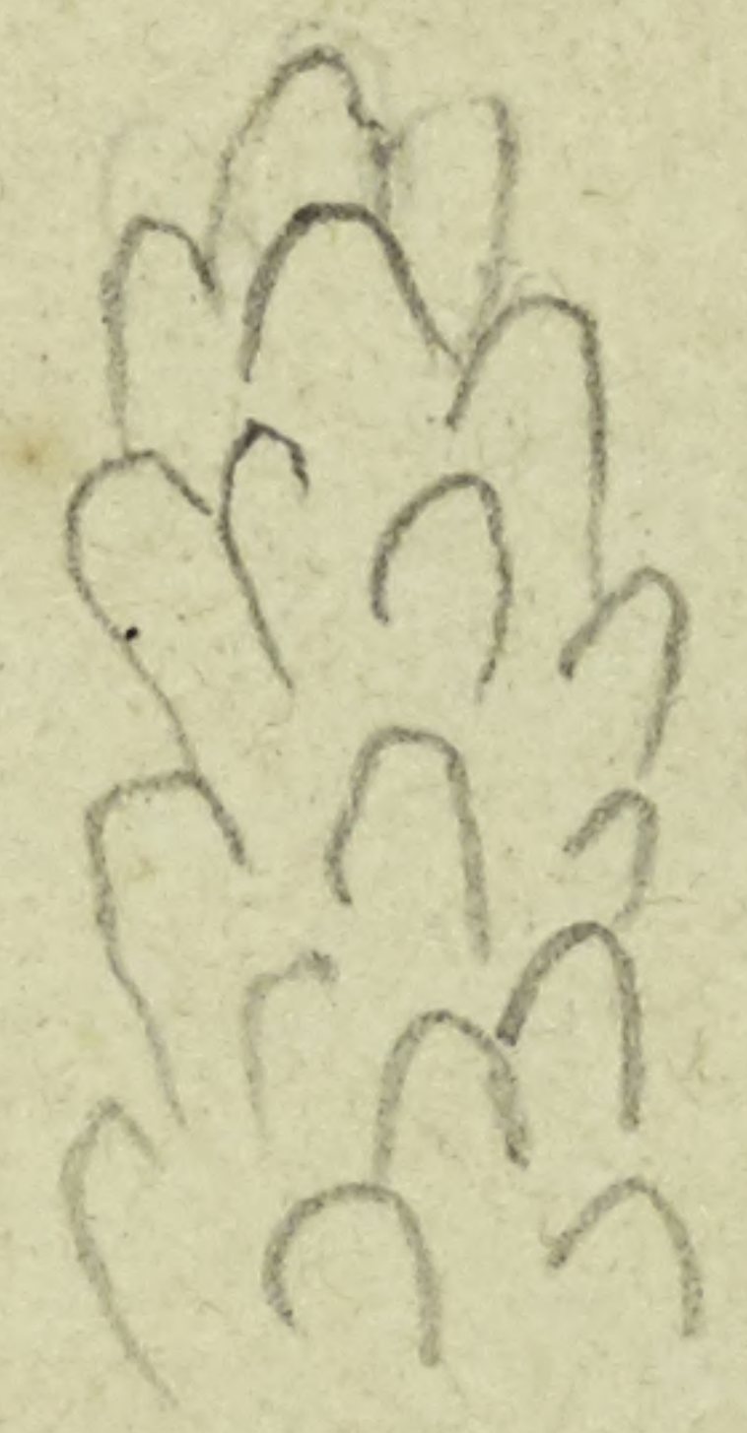
(terrestris)

June 25 1864

. American Bottom May 1845

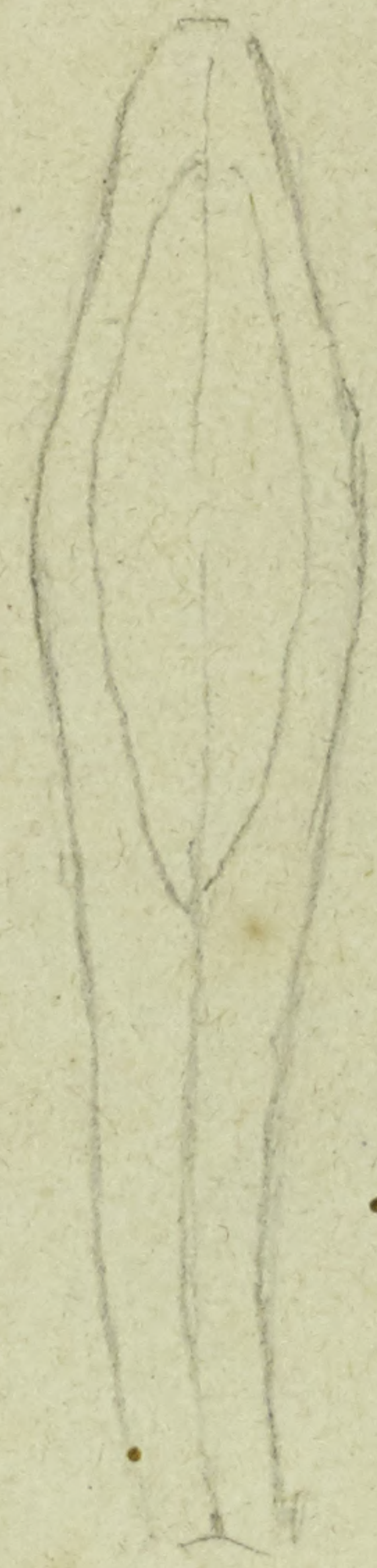
×30





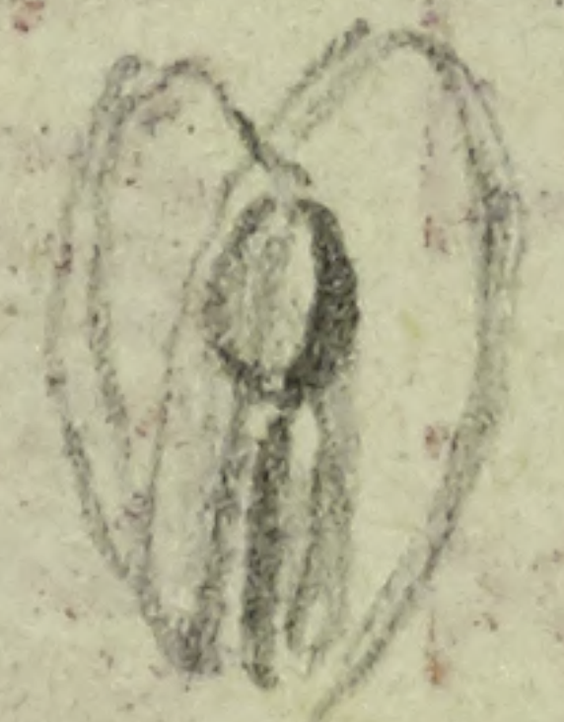
stigma
×150

upper 4th or 3d
of style stigmatic



×10

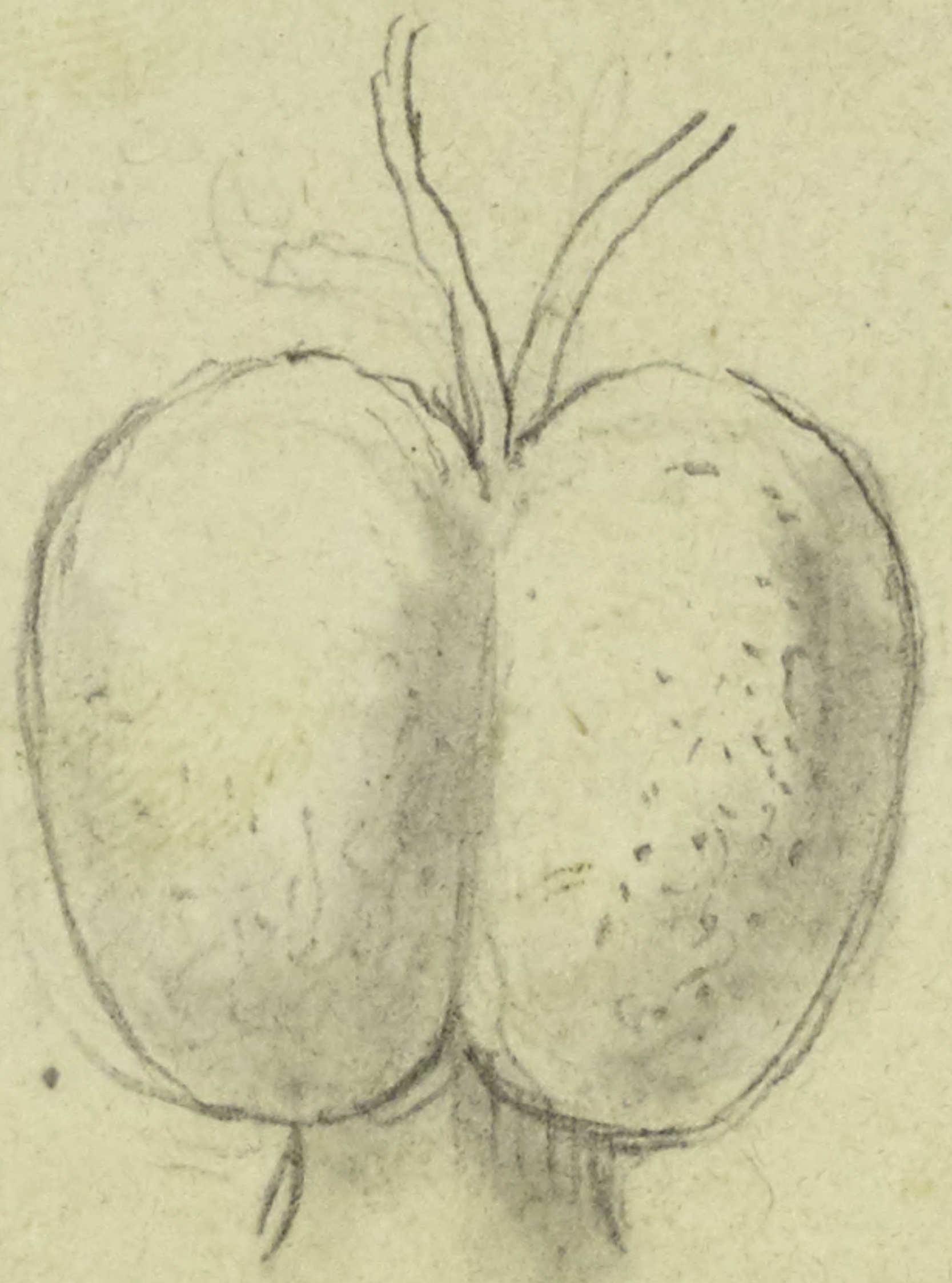
827



×30

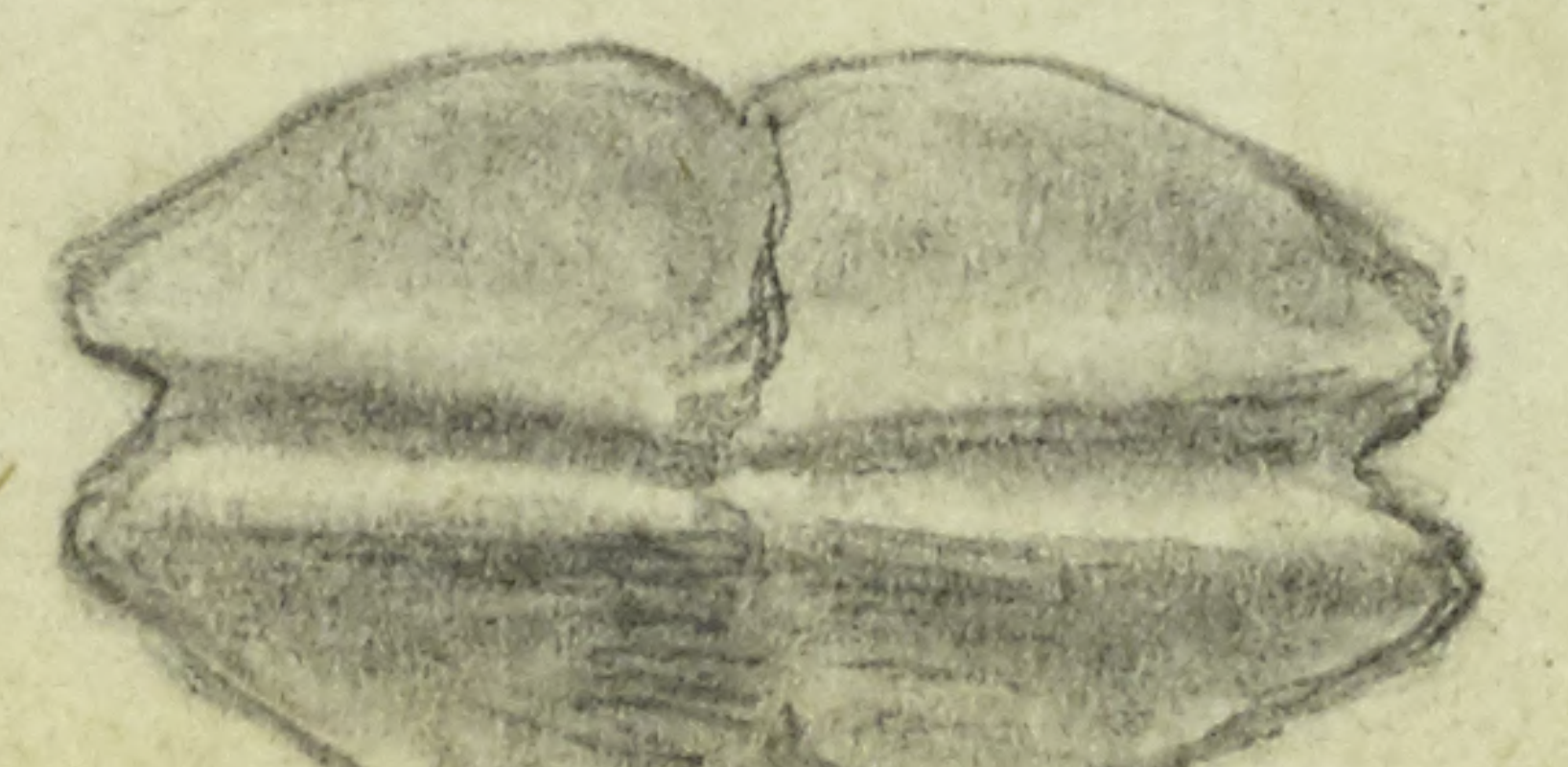
abortive stamen
& bracts

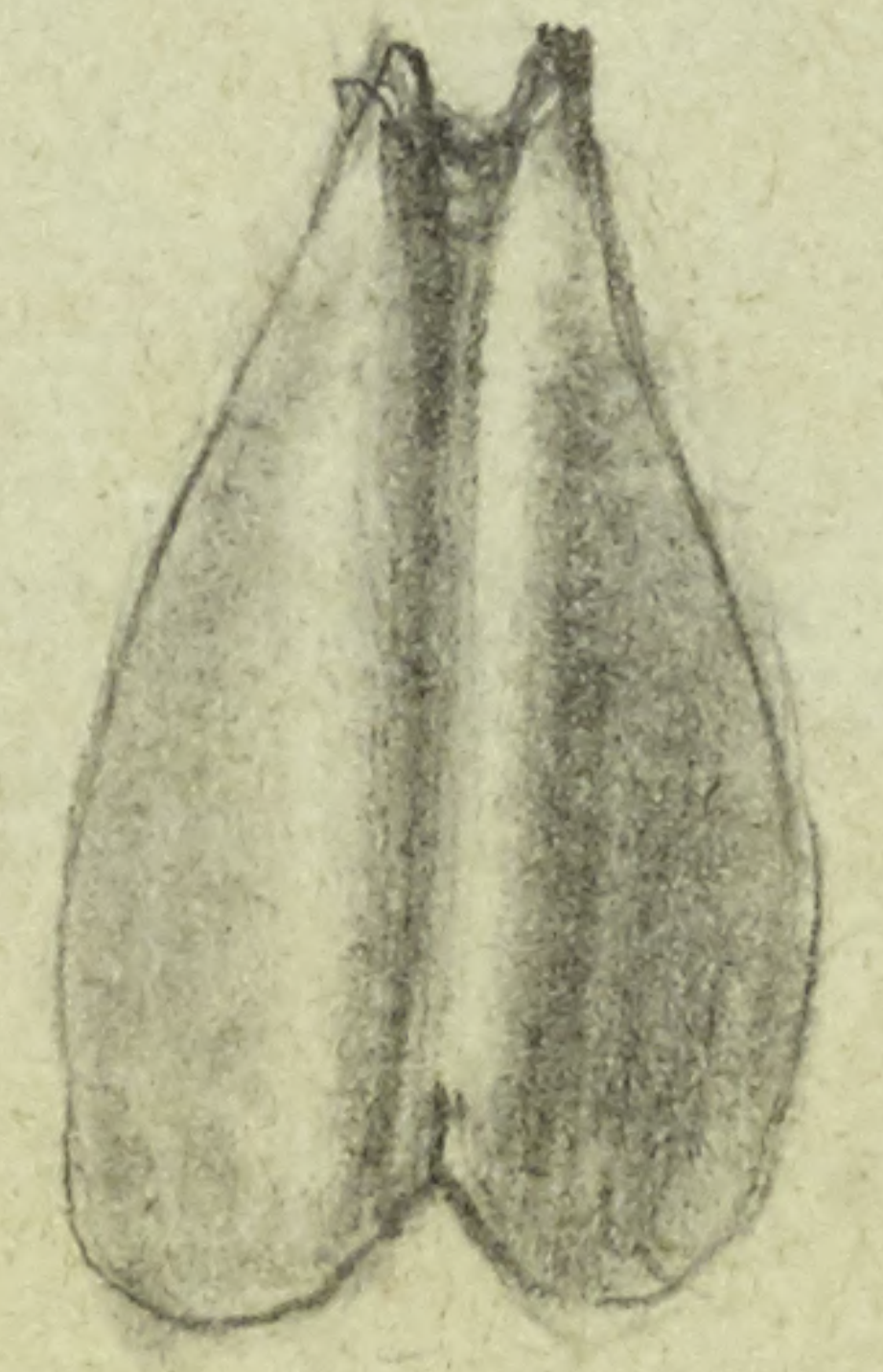
bracts usually small
or absent

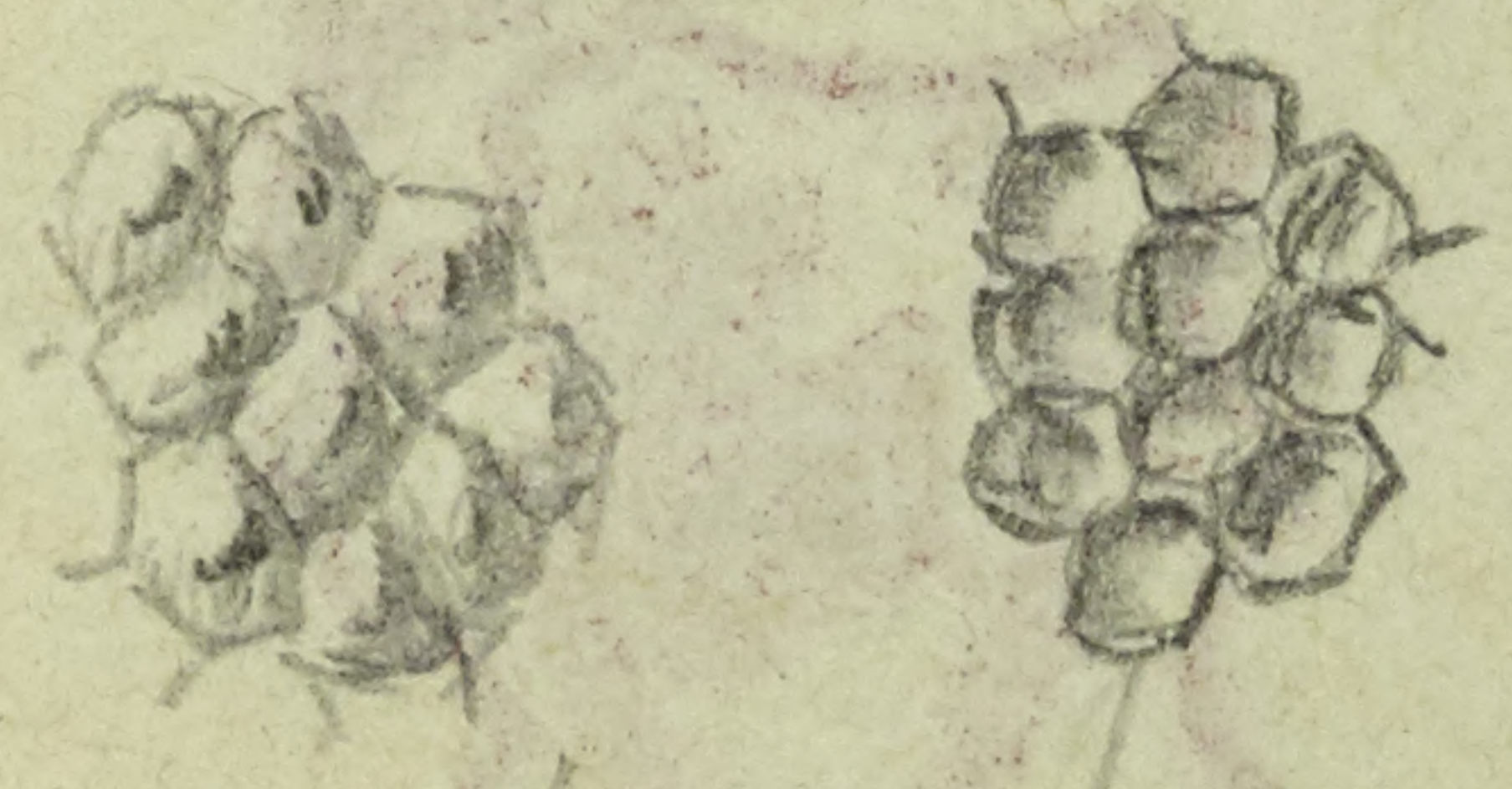


×30

$\frac{25\times22}{30} = 0.8\times0.7$ mm







styles breaking off in dry specimen?

roughness of nut-
-surface ×150
rather reticulate! no!

copyright reserved
MISSOURI
BOTANICAL
GARDEN

ALL THE NEW REMEDIES CONSTANTLY ON HAND

ALEX. LEITCH,
APOTHECARY & CHEMIST,
Cor. 4th and Olive Sts., St. Louis.

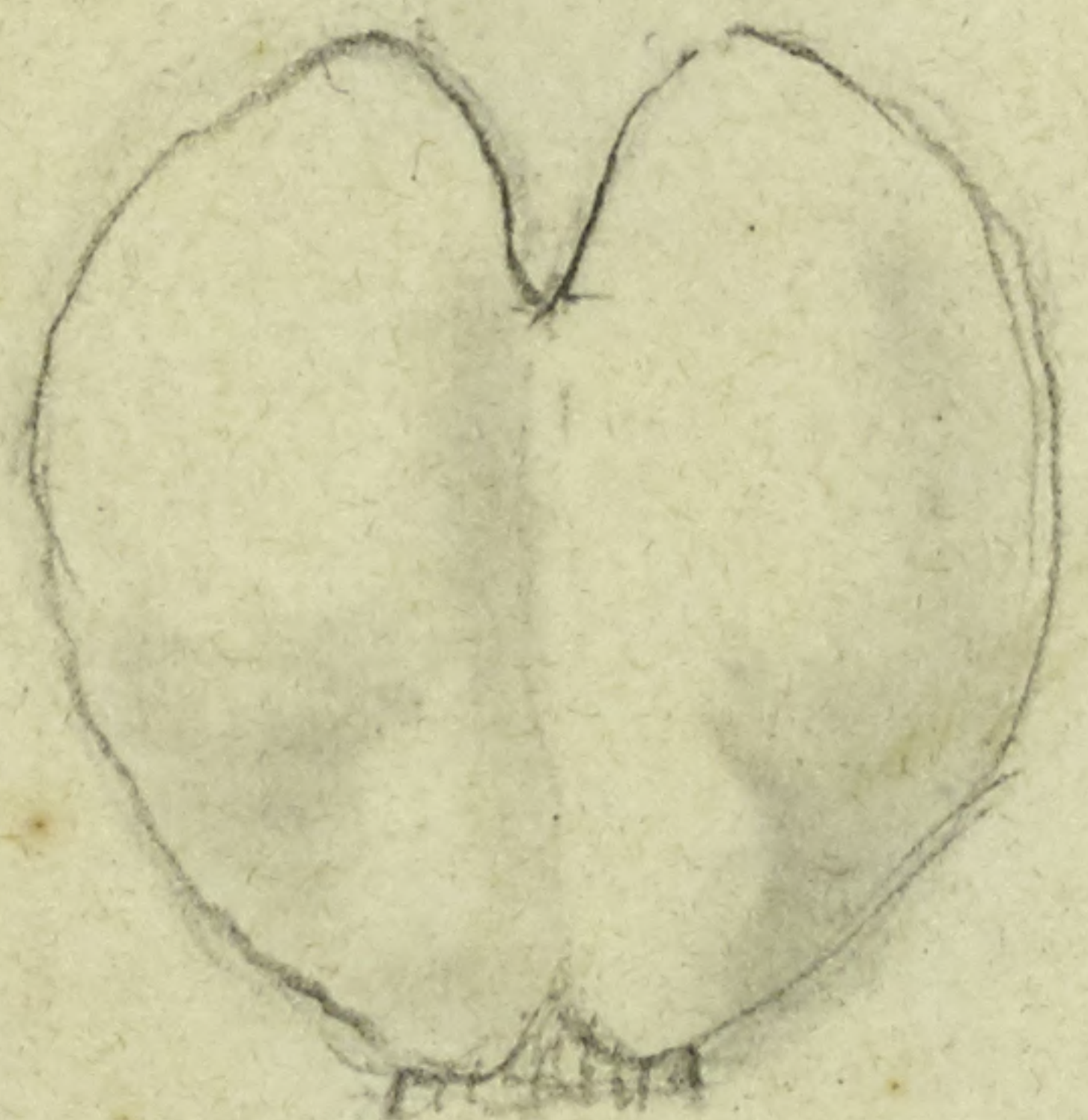
CHEMIST

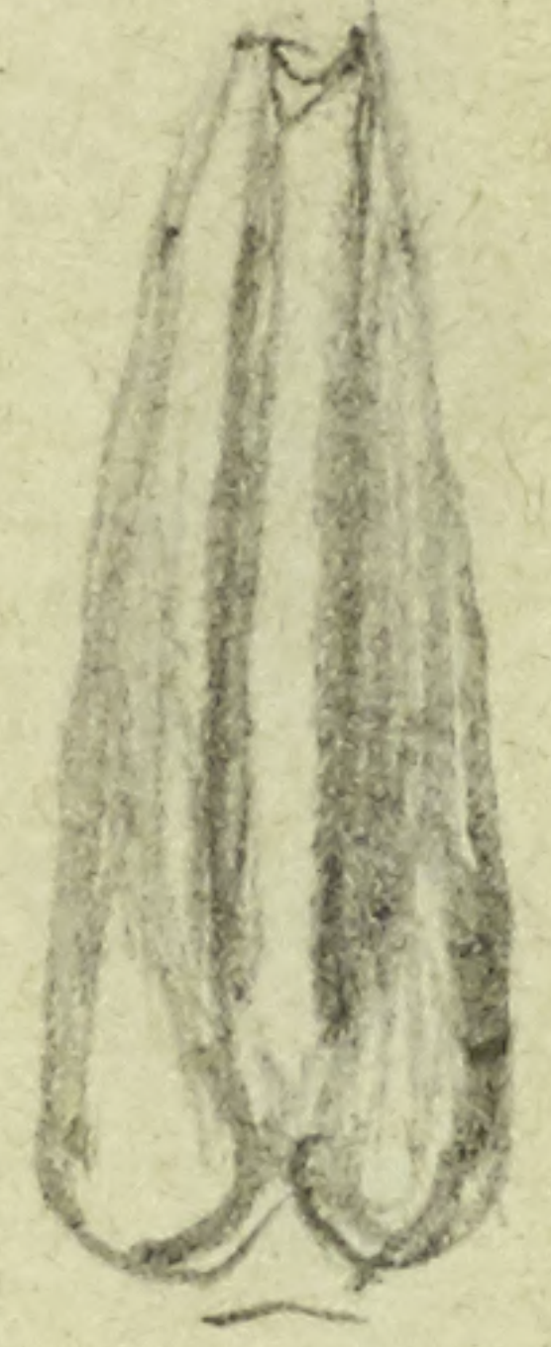
0 1 2 3 4 5 6 7 8 9 10
cm copyright reserved
MISSOURI
BOTANICAL
GARDEN

Callitriche

June 26 1864

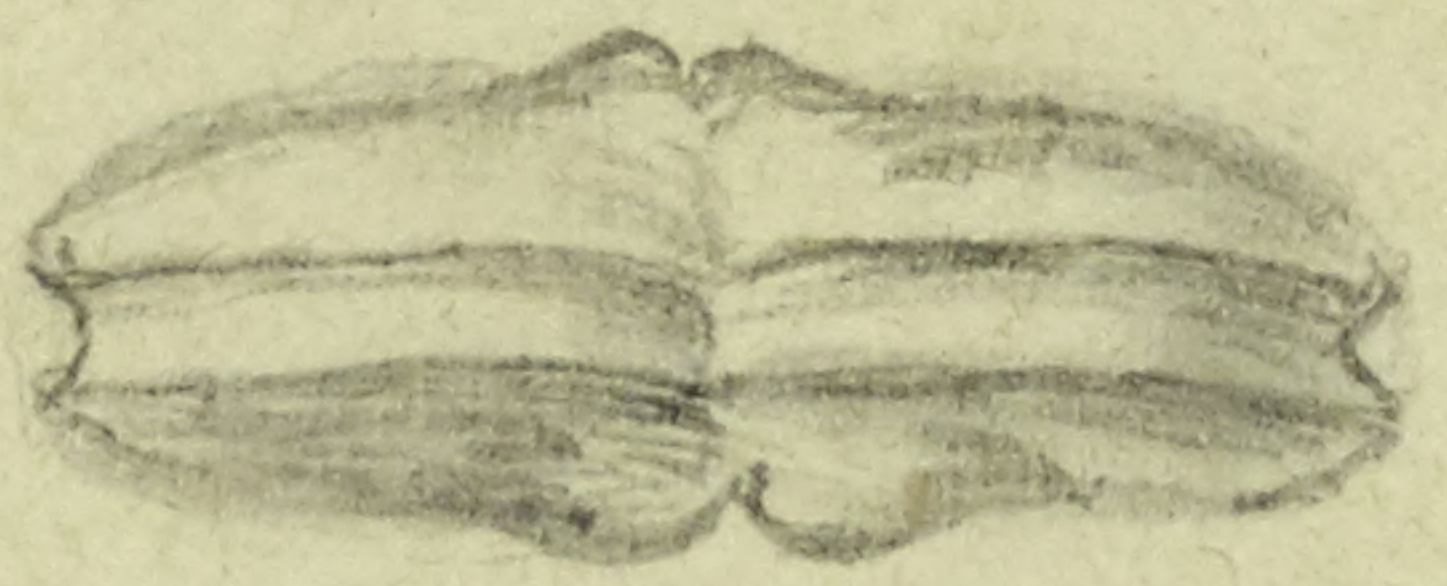
Little Mamelle Ark 1835



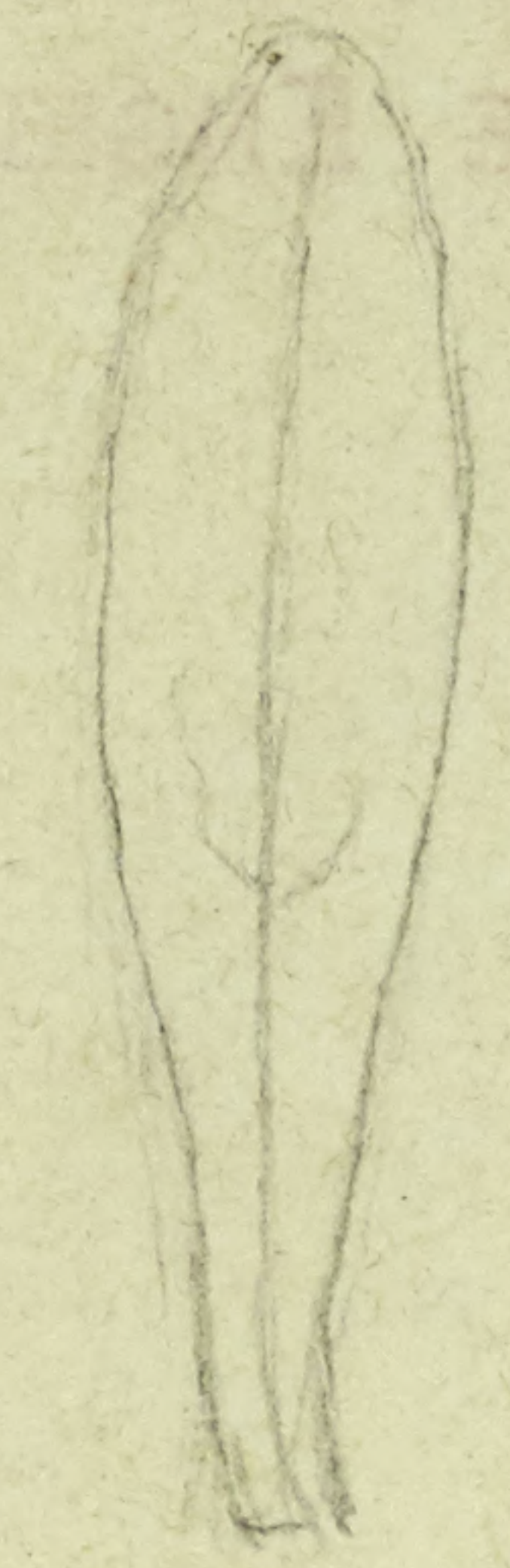


X30

$\frac{23 \times 23}{30} = 0.8 \times 0.8$ mm



fruit not ripe



x10

lateral ridges very indistinct

828

no styles even on young fruits observed — specimens poor — emargination of fruit very marked — bulging out at base very indistinct.

0 1 2 3 4 5 6 7 8 9 10 cm copyright reserved
MISSOURI BOTANICAL GARDEN

CHEMIST.

ALEX. LEITCH,
APOTHECARY & CHEMIST,
Cor. 4th and Olive Sts., St. Louis.

ALL THE NEW REMEDIES CONSTANTLY ON HAND

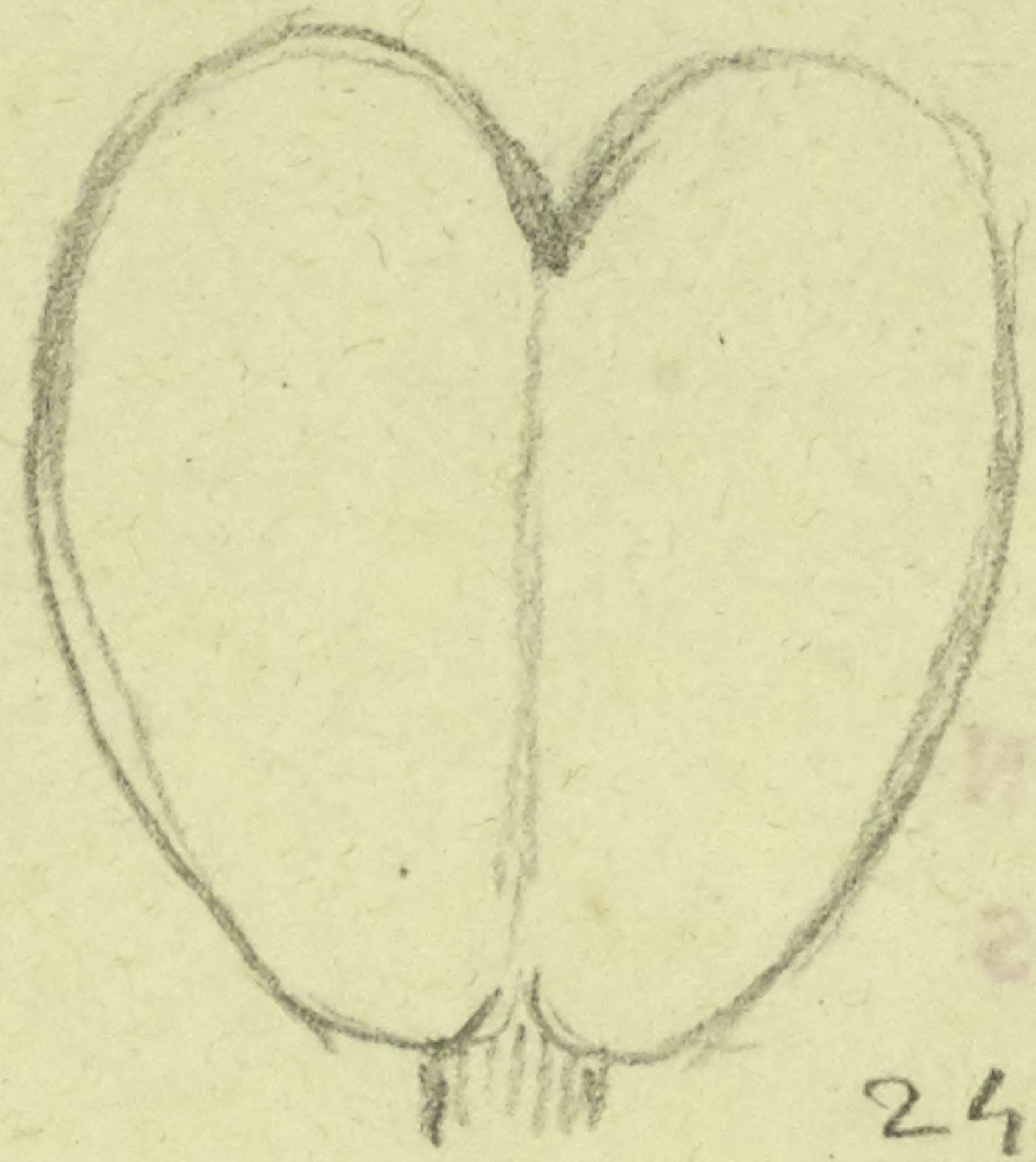
Callitriche Asae Grayi 829 Octob 9 1864

„C. Setacea"

„C. autumnalis Americana" Rafinesque scrips fide Durand.

forma submersa setacea

fruct. immaturi. (steriles?)



$\frac{24 \times 25}{30} = 0.8 \times 0.8$ mm

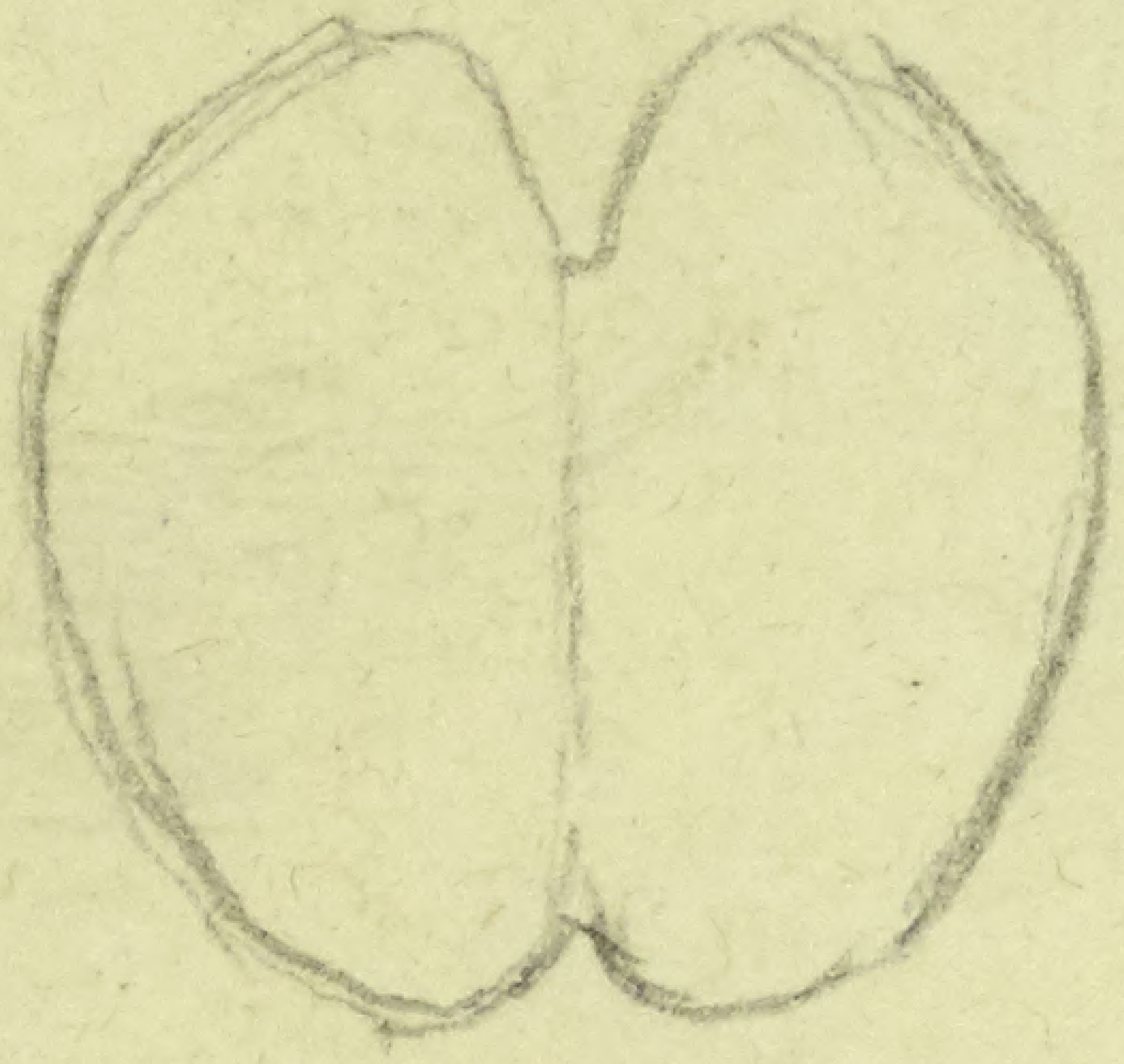
0 1 2 3 4 5 6 7 8 9 10
cm copyright reserved
MISSOURI
BOTANICAL
GARDEN

TCH,
RMACEUTIST,
live Sts. St. Louis, Mo.

0 1 2 3 4 5 6 7 8 9 10
cm
copyright reserved
MISSOURI
BOTANICAL
GARDEN

Callitriche Asae Grayi Octob 9 1864

Mead, Augusta Illinois (Hb Shaw)
forma linearis submersa microcarpa



$\frac{21 \times 22}{30}$ = 0,7 × 0,7 mm

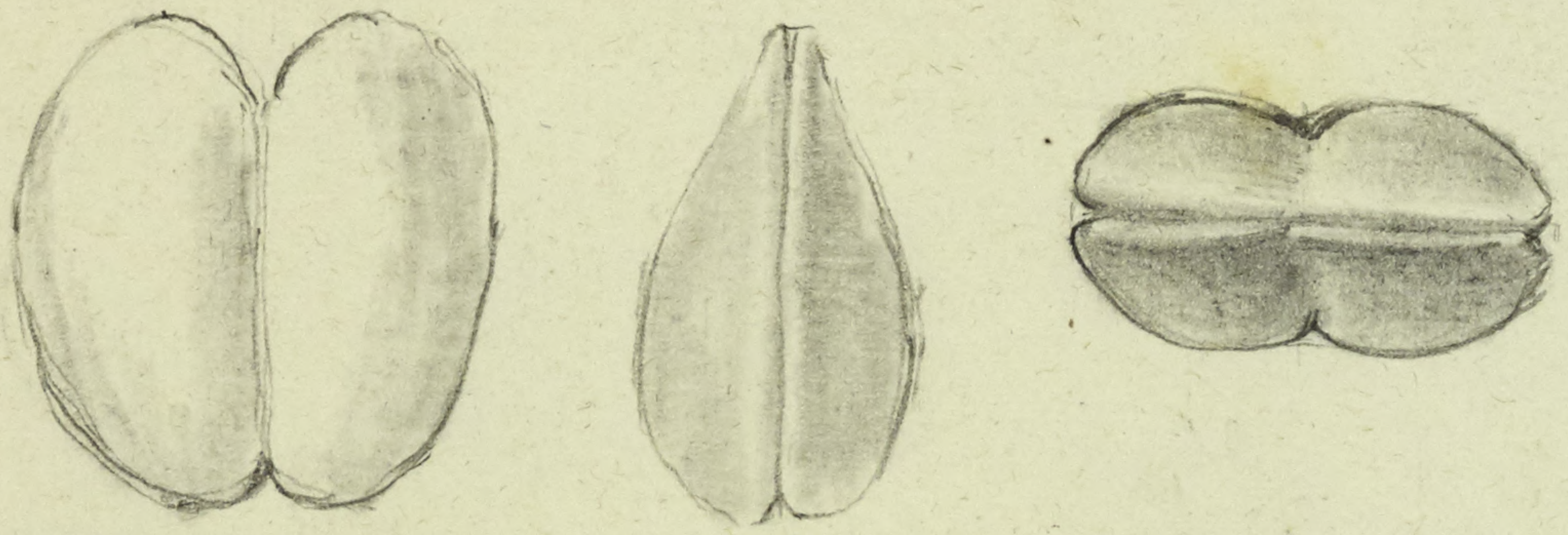
830

CEUTIST,
St. Louis, Mo.

Callitriche Asae Grayi   Octob 10 1864

submersa linearis

x30



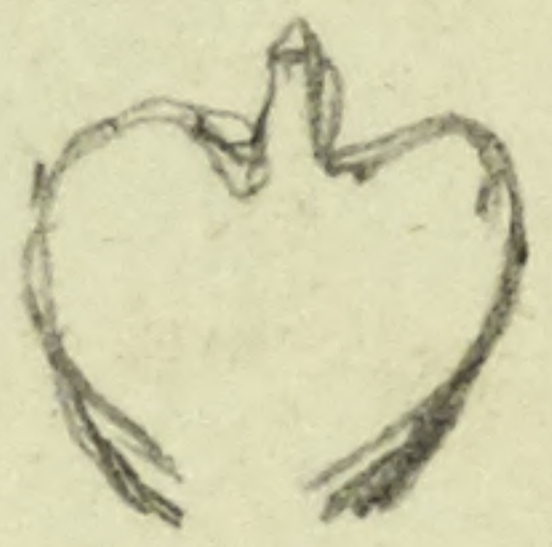
"C. linearis"

Florida, Rugel

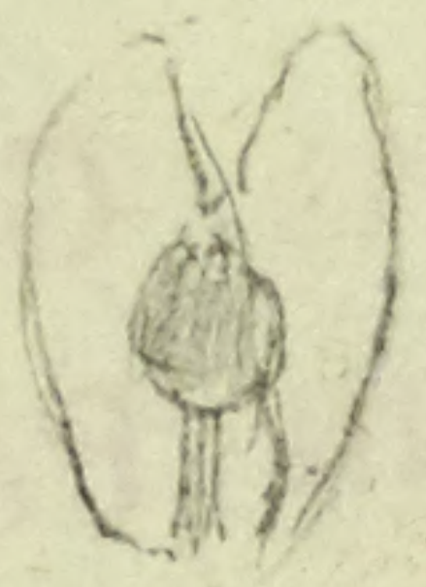
- Hb H.W. [illegible]

$\frac{21 \times 21}{30} = 0.7 \times 0.7$ mm

x30



pistill with
abortive style
without bracts



abortive
anther
with bracts

anthers in submersed plants always abortive, but usually with small bracts, while the pistils are most frequently bractless — often no anthers at all

831

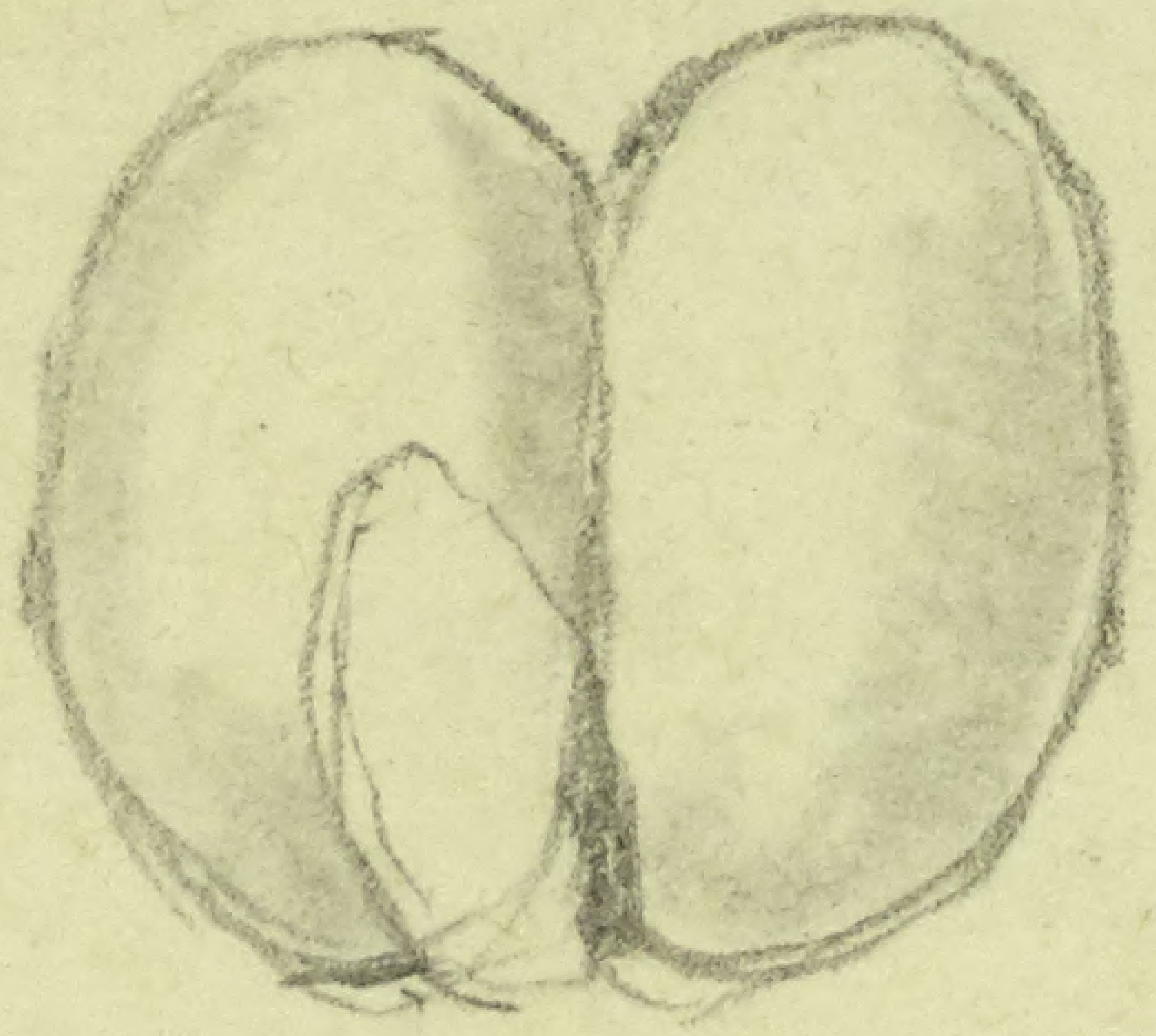
0 1 2 3 4 5 6 7 8 9 10
cm
copyright reserved
MISSOURI
BOTANICAL
GARDEN

ALEX. LEITCH,
APOTHECARY & PHARMACEUTIST,
Marble Building Cor. Fourth & Olive Sts. St. Louis, Mo.

Callitriche

832 Oct 8 1862

Wright Texas in Hb Gray
aquaticum latifolium

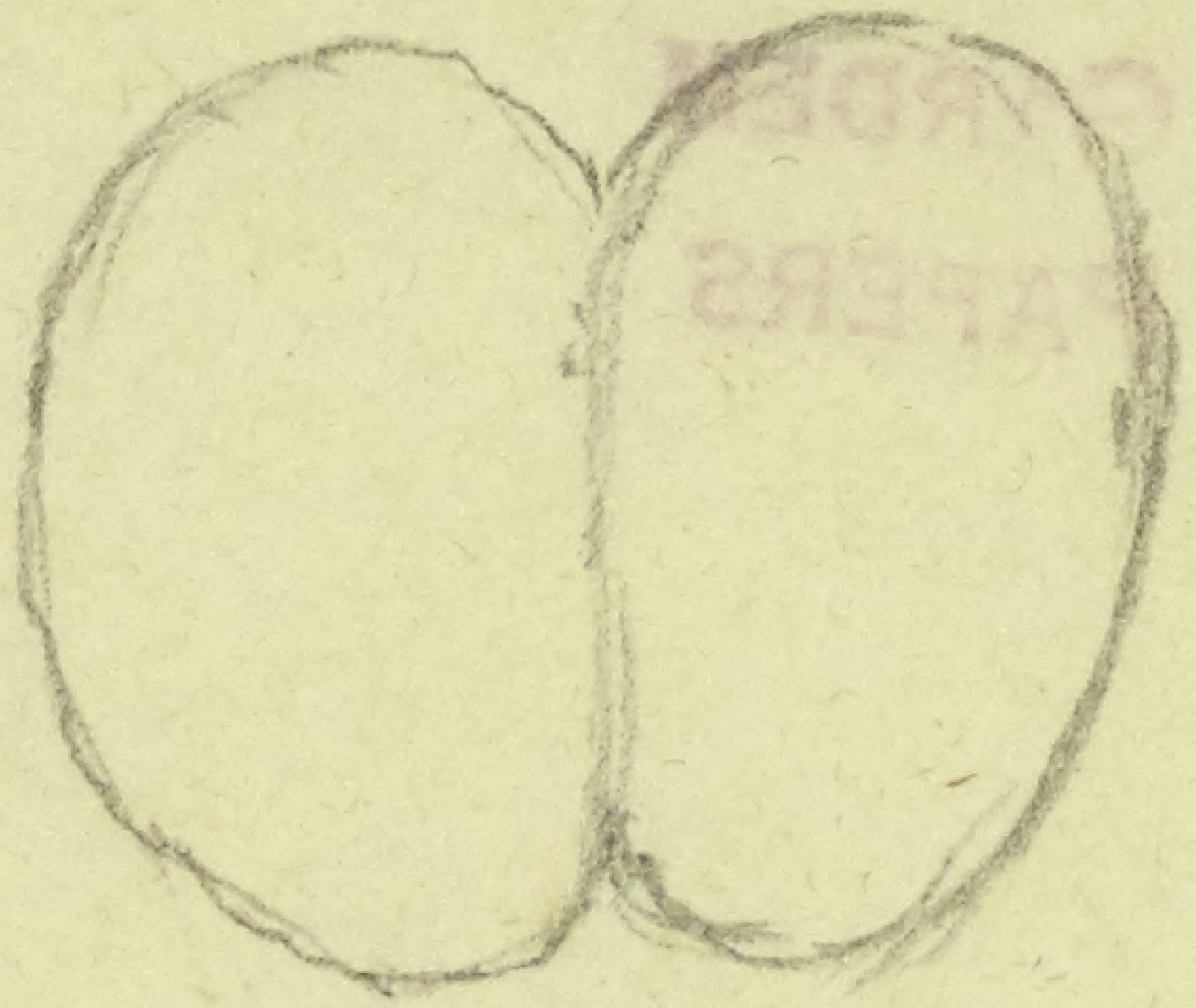


$\frac{18 \times 21}{30} = 0.6 \times 0.7$ mm

0 1 2 3 4 5 6 7 8 9 10
cm copyright reserved
MISSOURI BOTANICAL GARDEN

EITCH,
HARMACEUTIST,
& Olive Sts. St. Louis, Mo.

Callitriche Asa Grayi Oct 8 1864
forma heterophylla elongata
Connecticut, Eaton leg
Herb Gray


X30

$\frac{24\times20}{30} = 0{,}8\times0{,}7$ mm

833

0 1 2 3 4 5 6 7 8 9 10
cm
copyright reserved
MISSOURI
BOTANICAL
GARDEN

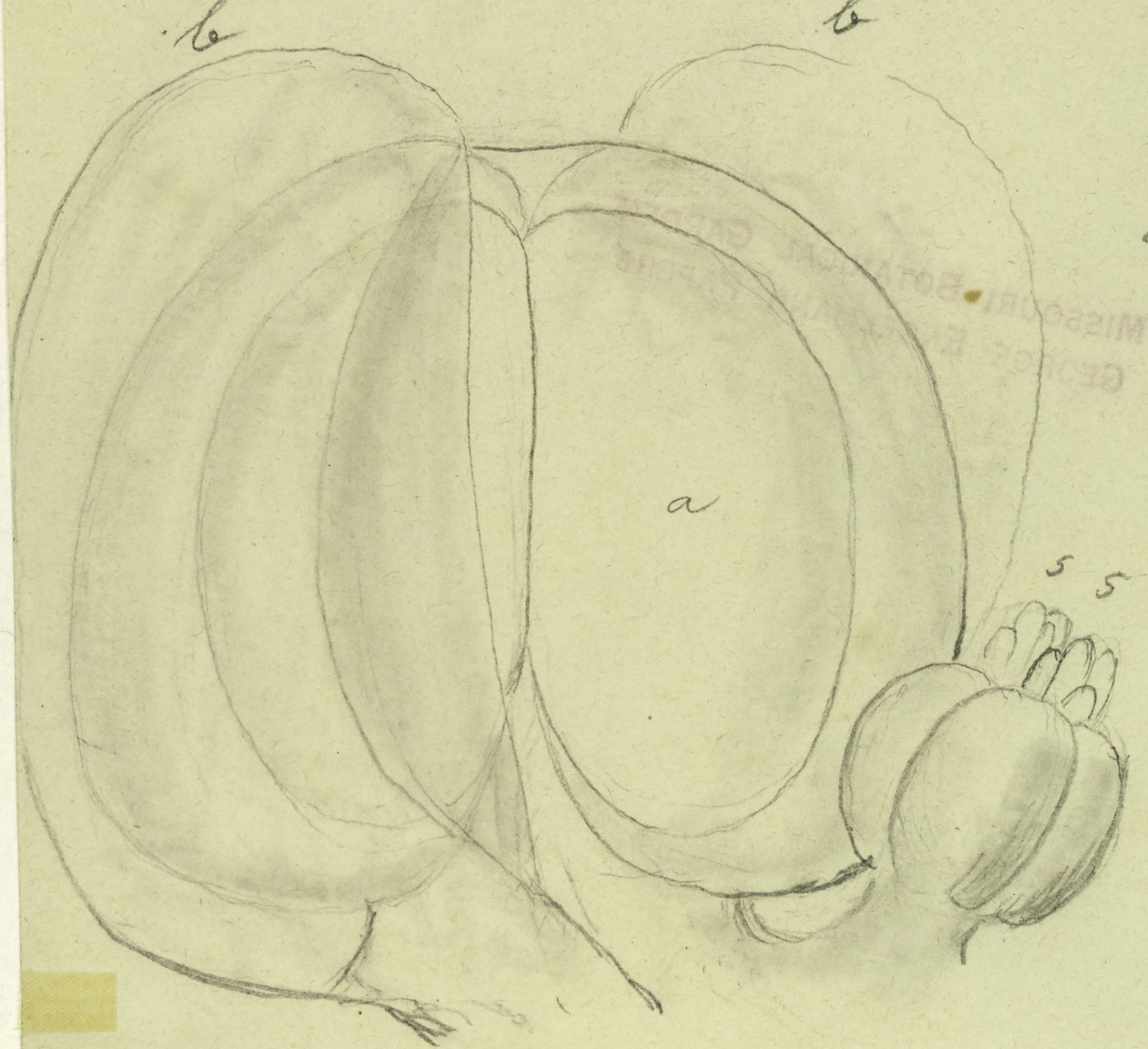
CH,
MACEUTIST,
re Sts. S^t Louis, Mo.

Call. Asa Grayi
latifolia aquatica

Octob 2 1864

Athens Ill. E Hall 1861

×150



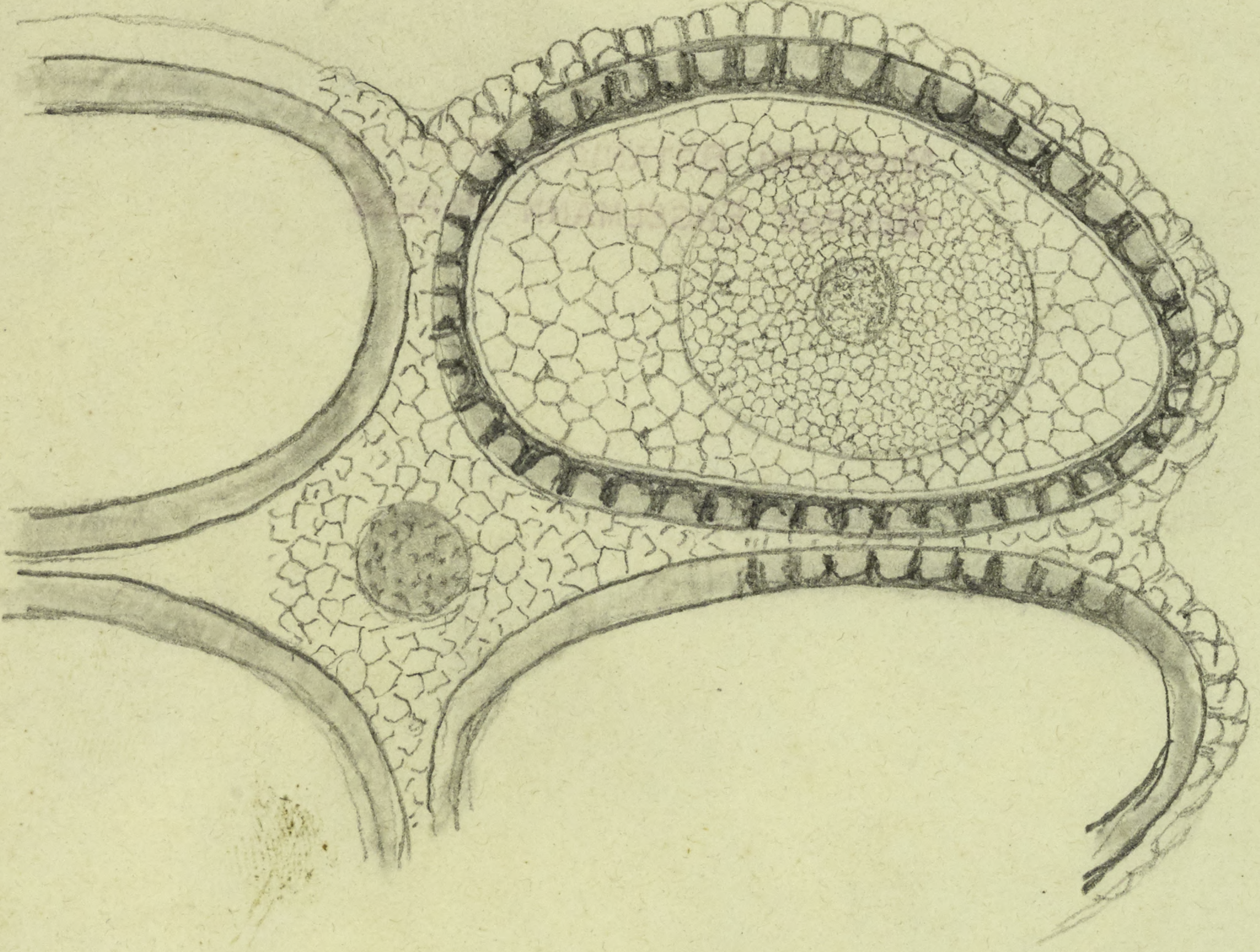
very young anther, a
with 2 bracts bb
and an extremely
young pistill p
and the rudiments
of 2 stigmata

834

0 1 2 3 4 5 6 7 8 9 10
cm
copyright reserved
MISSOURI
BOTANICAL
GARDEN

ALEX. LEITCH,
APOTHECARY & PHARMACEUTIST,
Marble Building Cor. Fourth & Olive Sts. St. Louis, Mo.

Callitriche Asae Grayi Oct 5 1864
Athens Ill. E Hall



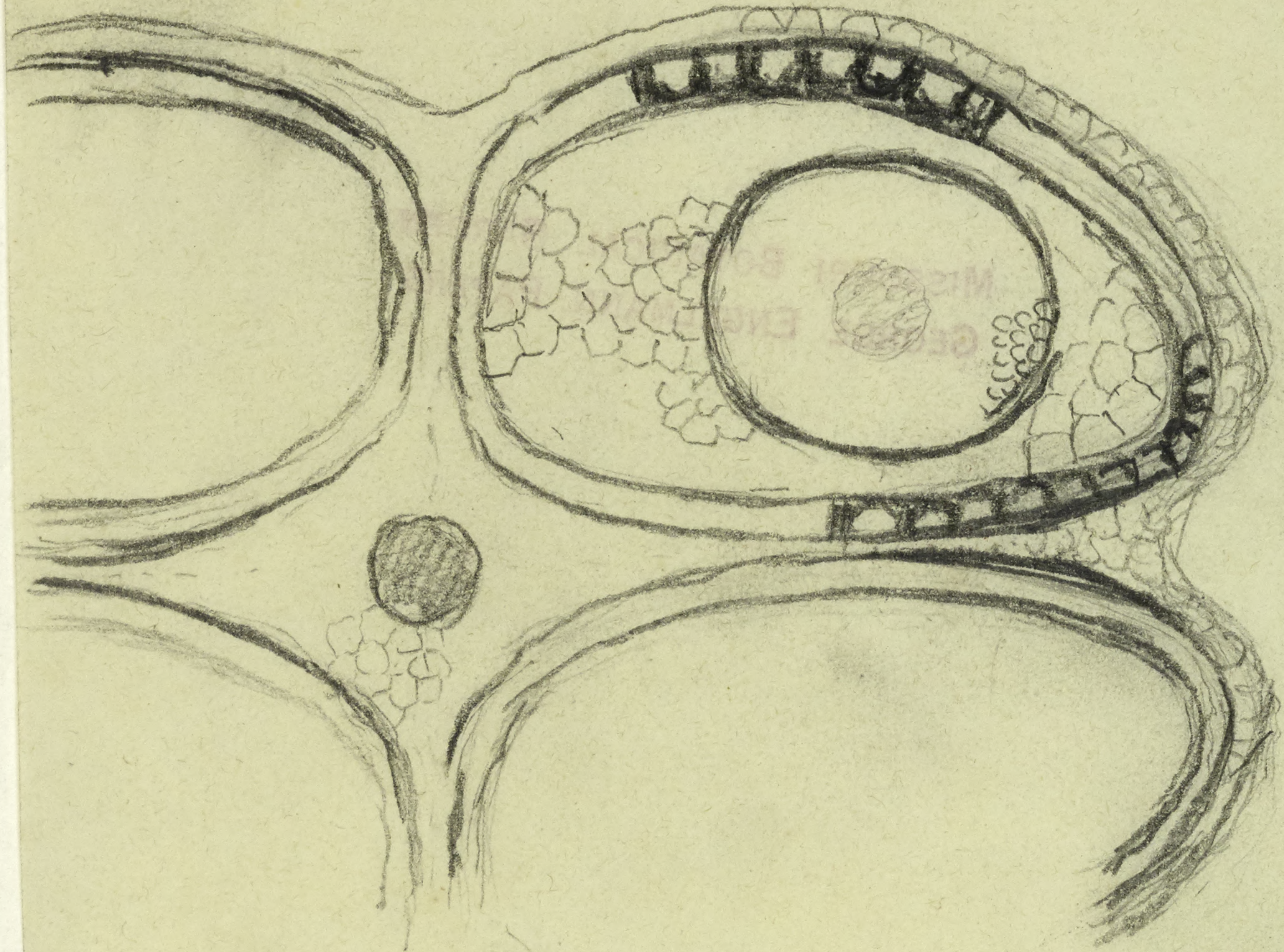
Sect of fruit
× 150

835

ALEX. LEITCH,
APOTHECARY & PHARMACEUTIST,
Marble Building Cor. Fourth & Olive Sts. St. Louis, Mo.

6

12 300

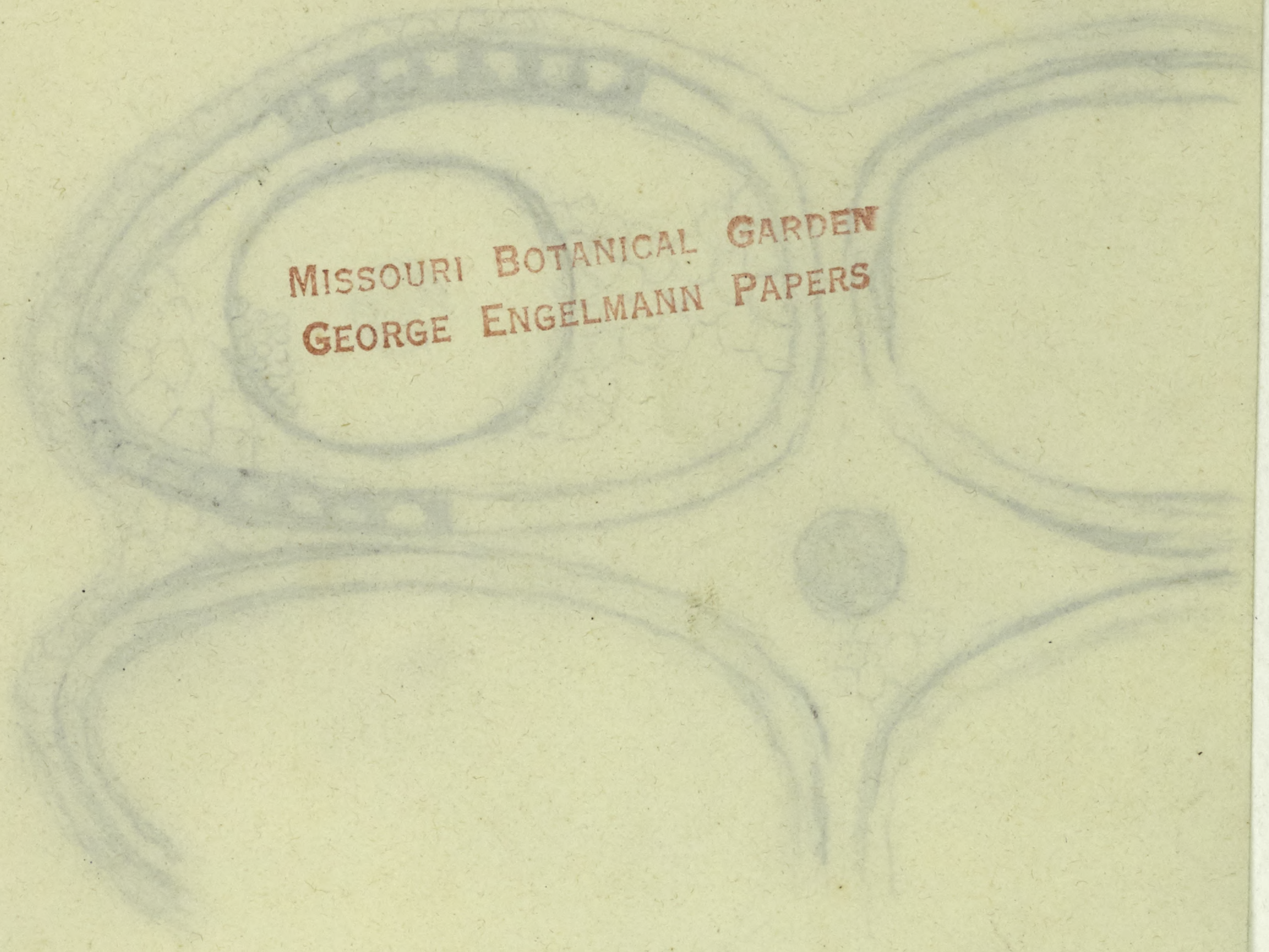


836

0 1 2 3 4 5 6 7 8 9 10
cm copyright reserved
MISSOURI
BOTANICAL
GARDEN

ALEX. LEITCH,
APOTHECARY & PHARMACEUTIST,
Marble Building Cor. Fourth & Olive Sts. S^t Louis, Mo.

8

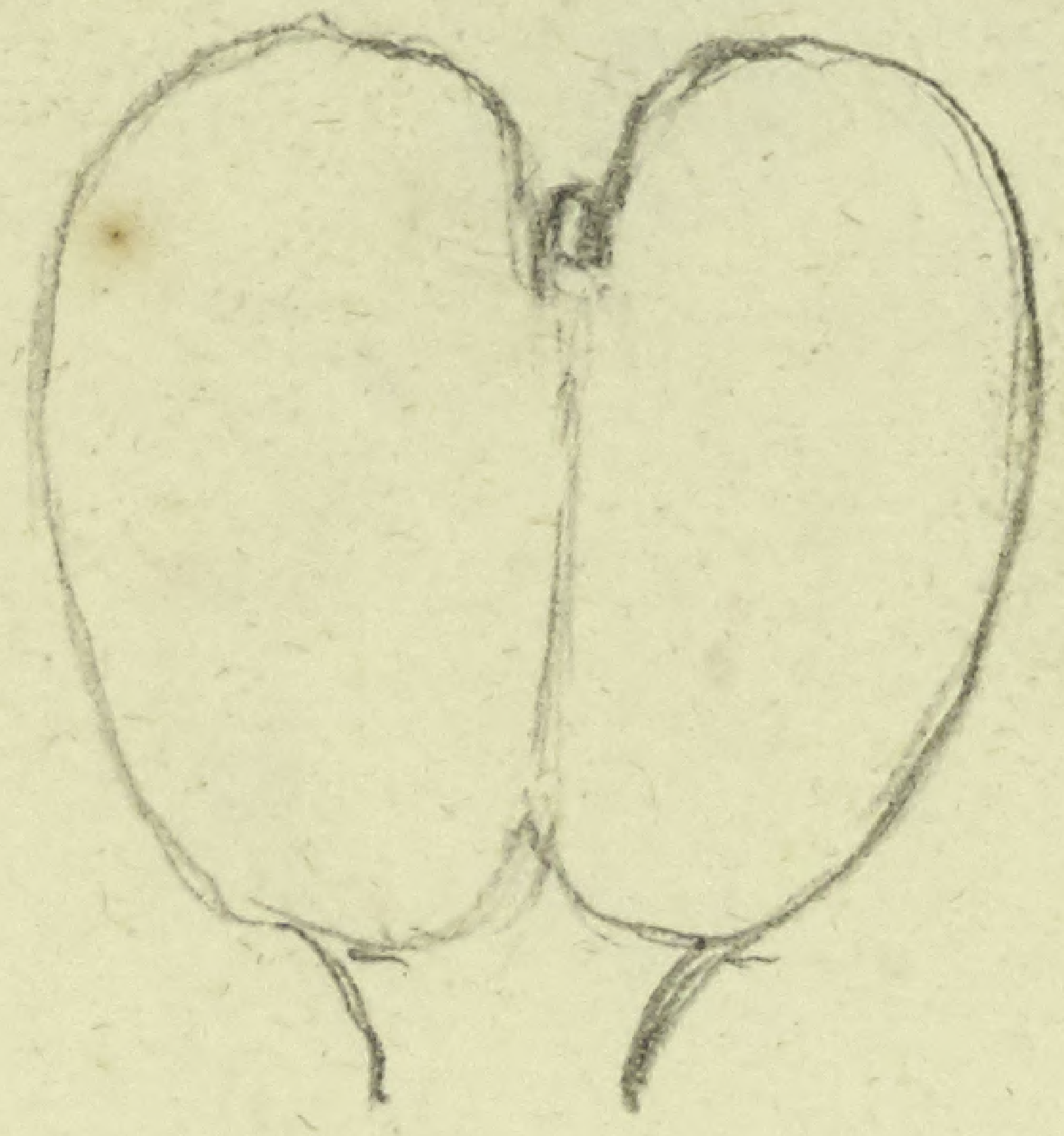


Call. Asae Grayi
var linearis

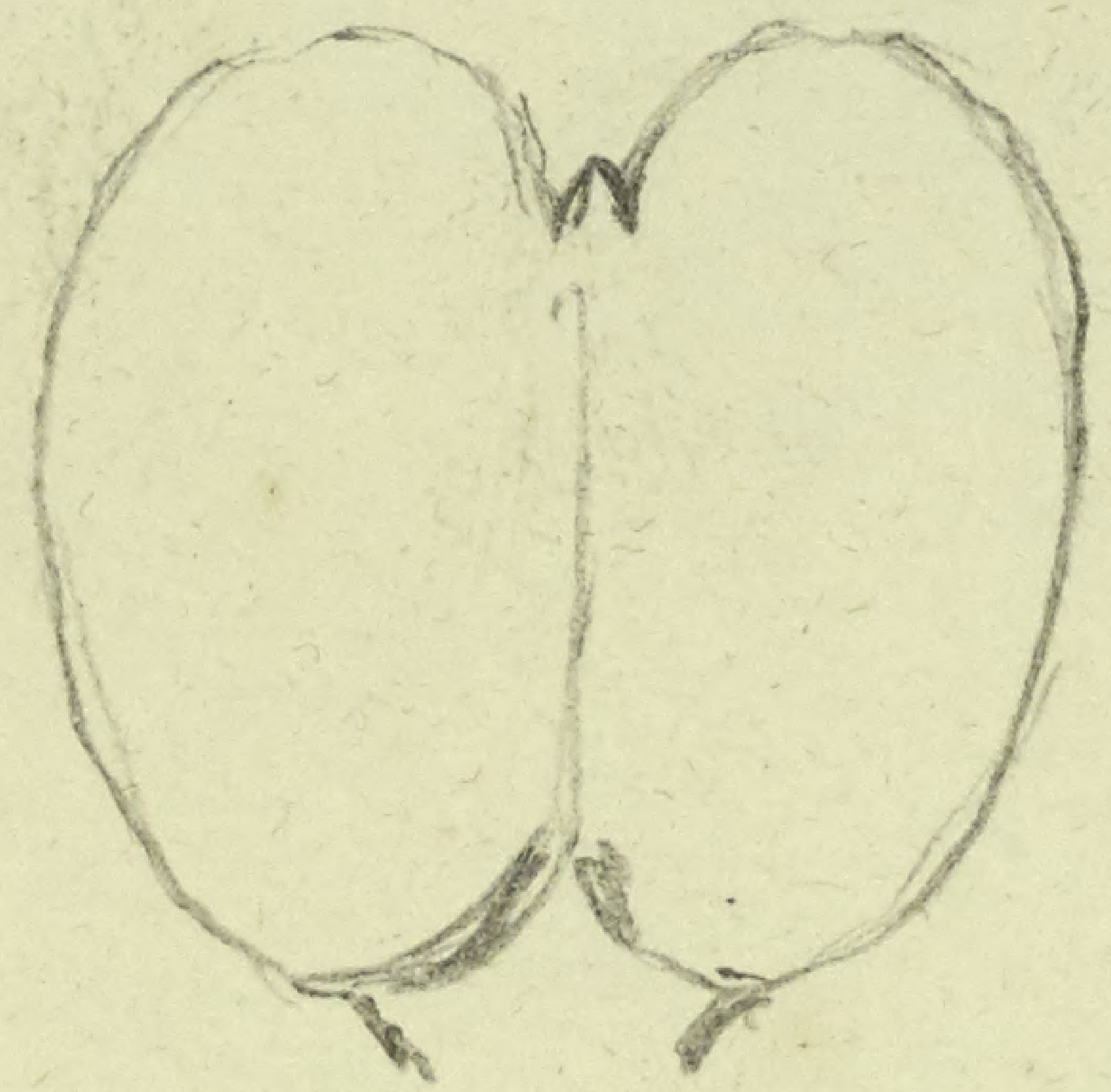
Nov 4 1862

Brooklyn N.Y.
Cadman leg. 1864

x 30



23 x 21 / 60 mm



24 x 22 / 60 mm

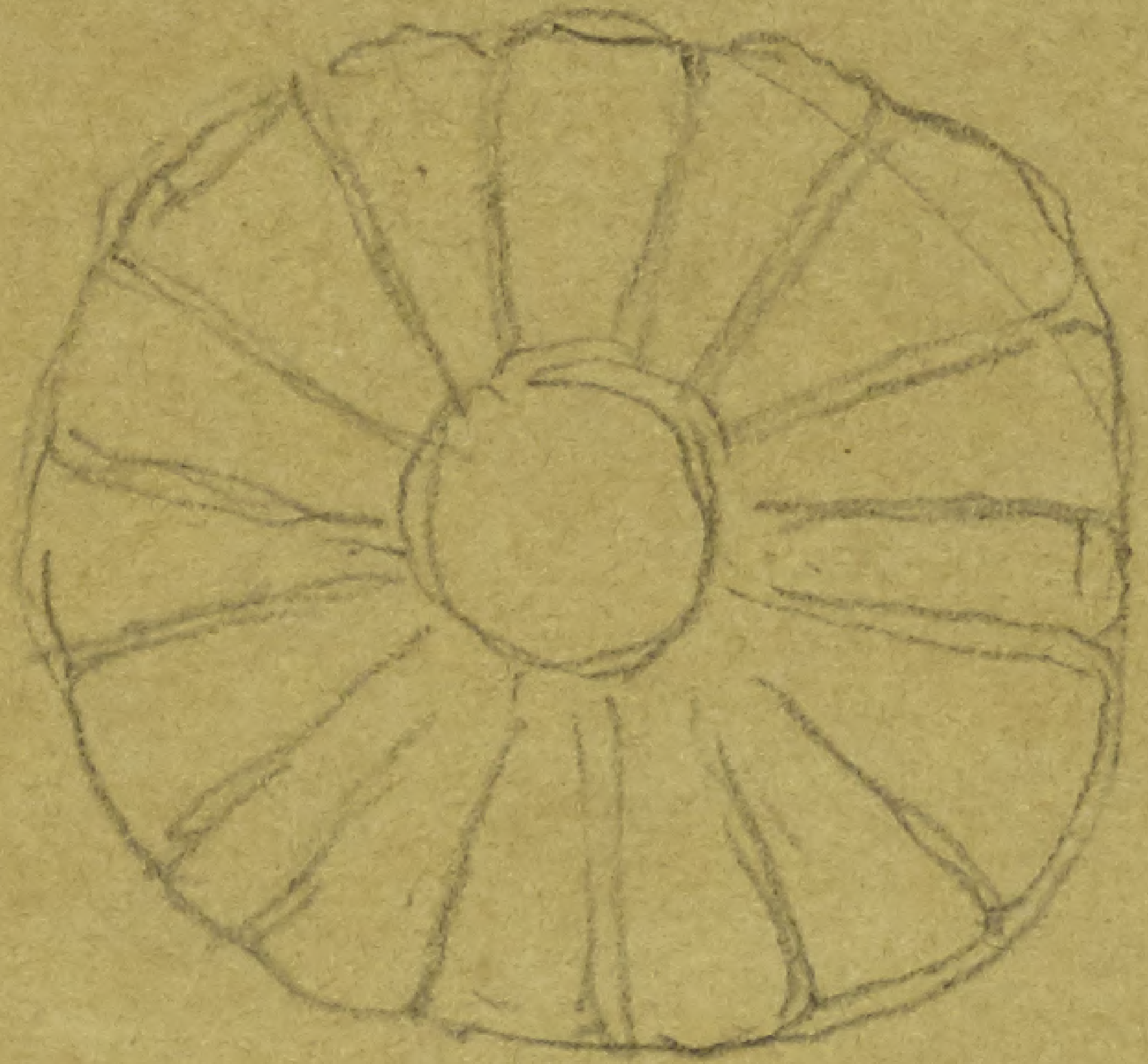
0.8 x 0.7 mm

LEX. LEITCH,
CARY & PHARMACEUTIST,
ding Cor. Fourth & Olive Sts. St. Louis, Mo.

Call. Asa Grayi Dec 5 1864

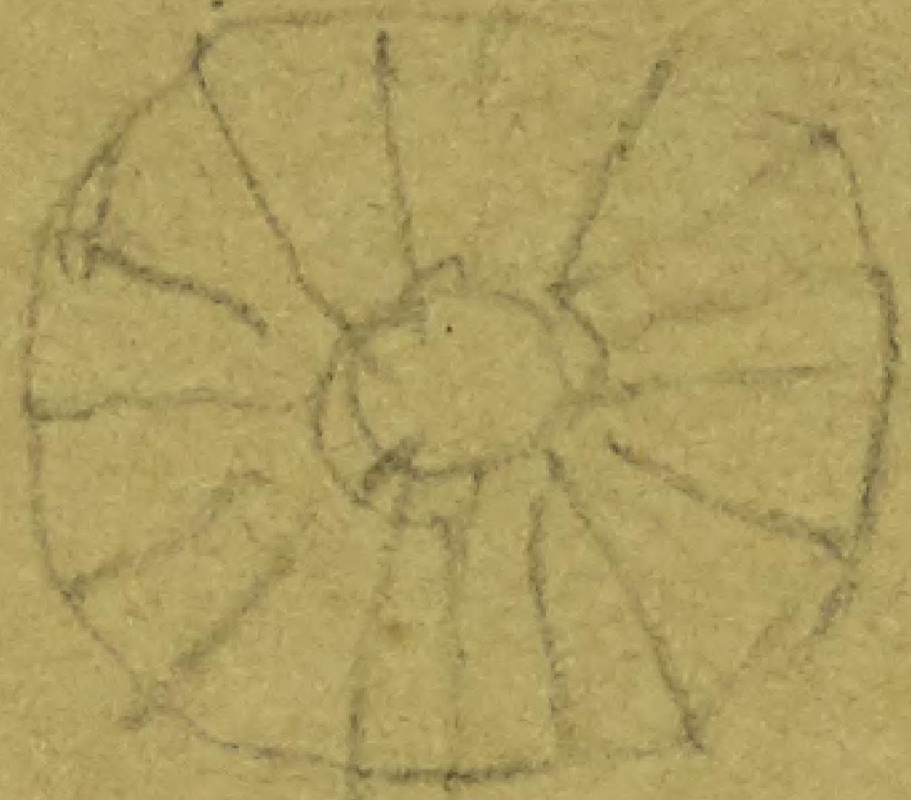
Palisades Austin Jan 1864

x 286



stellate hair

x 150



838

eitch,

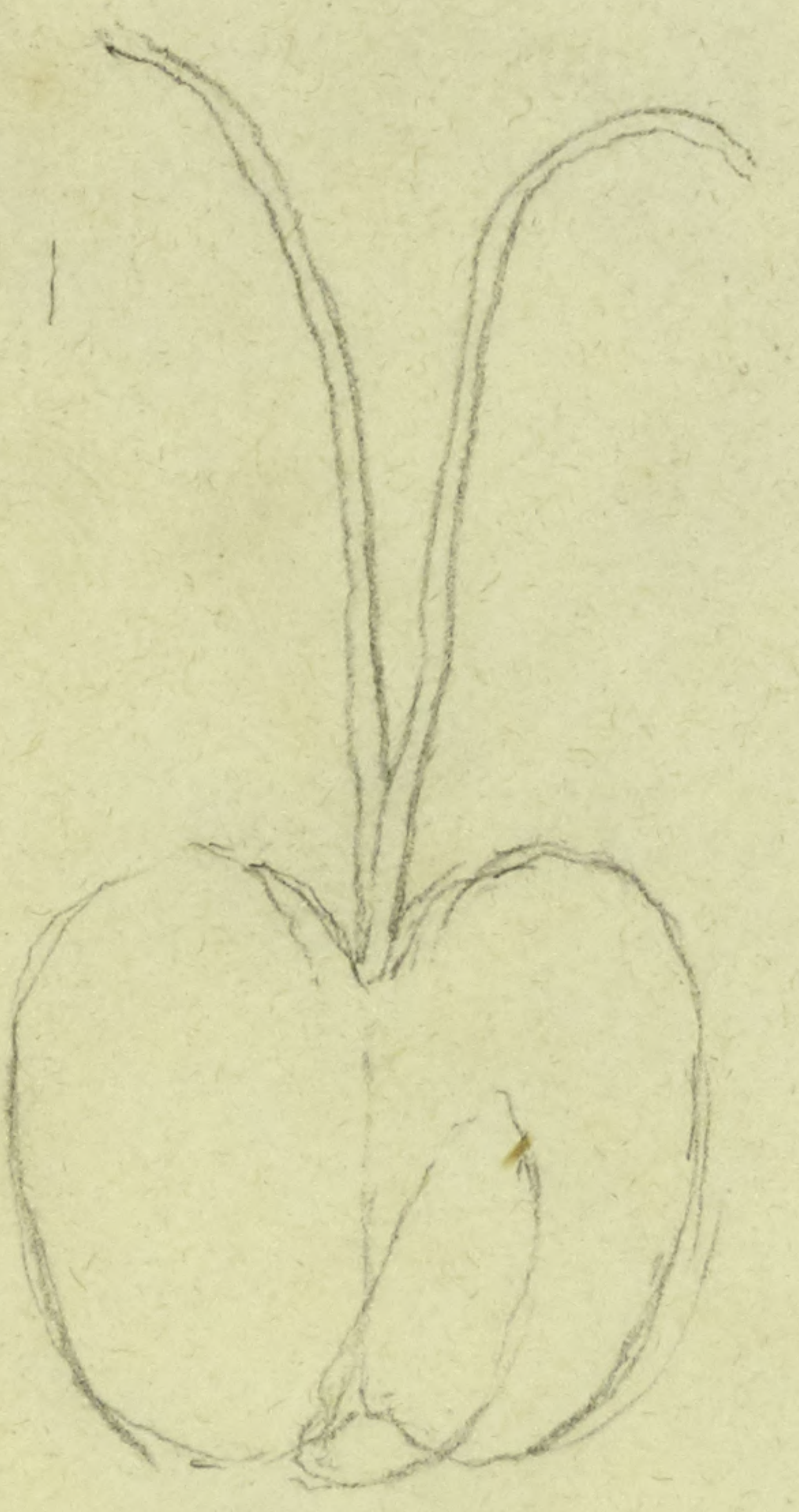
& CHEMIST,

s., St. Louis.

0 1 2 3 4 5 6 7 8 9 10
cm copyright reserved
MISSOURI
BOTANICAL
GARDEN

Alabama Buckley March 16 1865
in Herb Torrey
forma brevifolia

Calli. heterophylla



fruit

22 x 20
―――
30

= 0.8 x 0.7

839

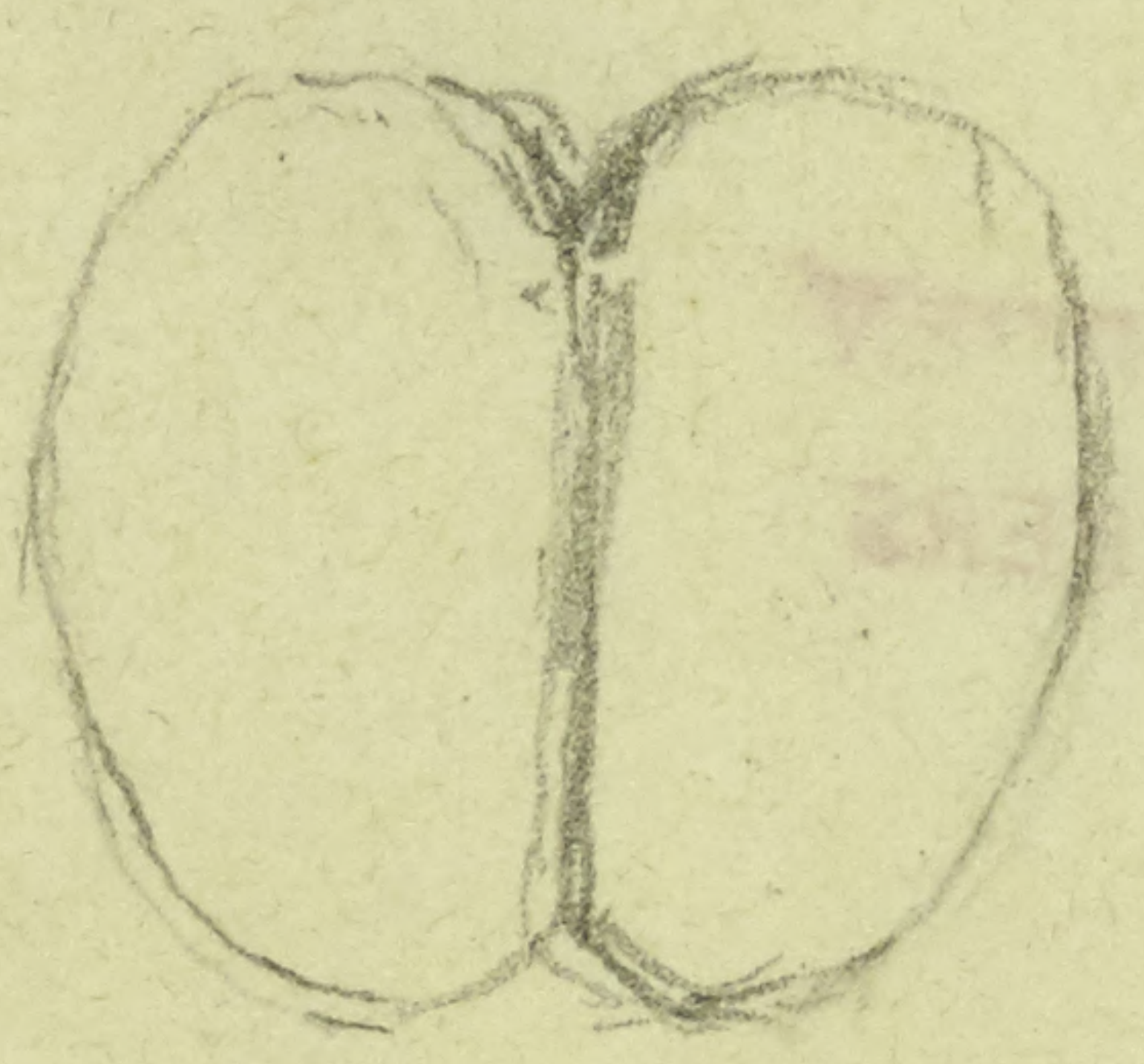
ALEX. LEITCH,

APOTHECARY & PHARMACEUTIST,

Marble Building Cor. Fourth & Olive Sts. St. Louis, Mo.

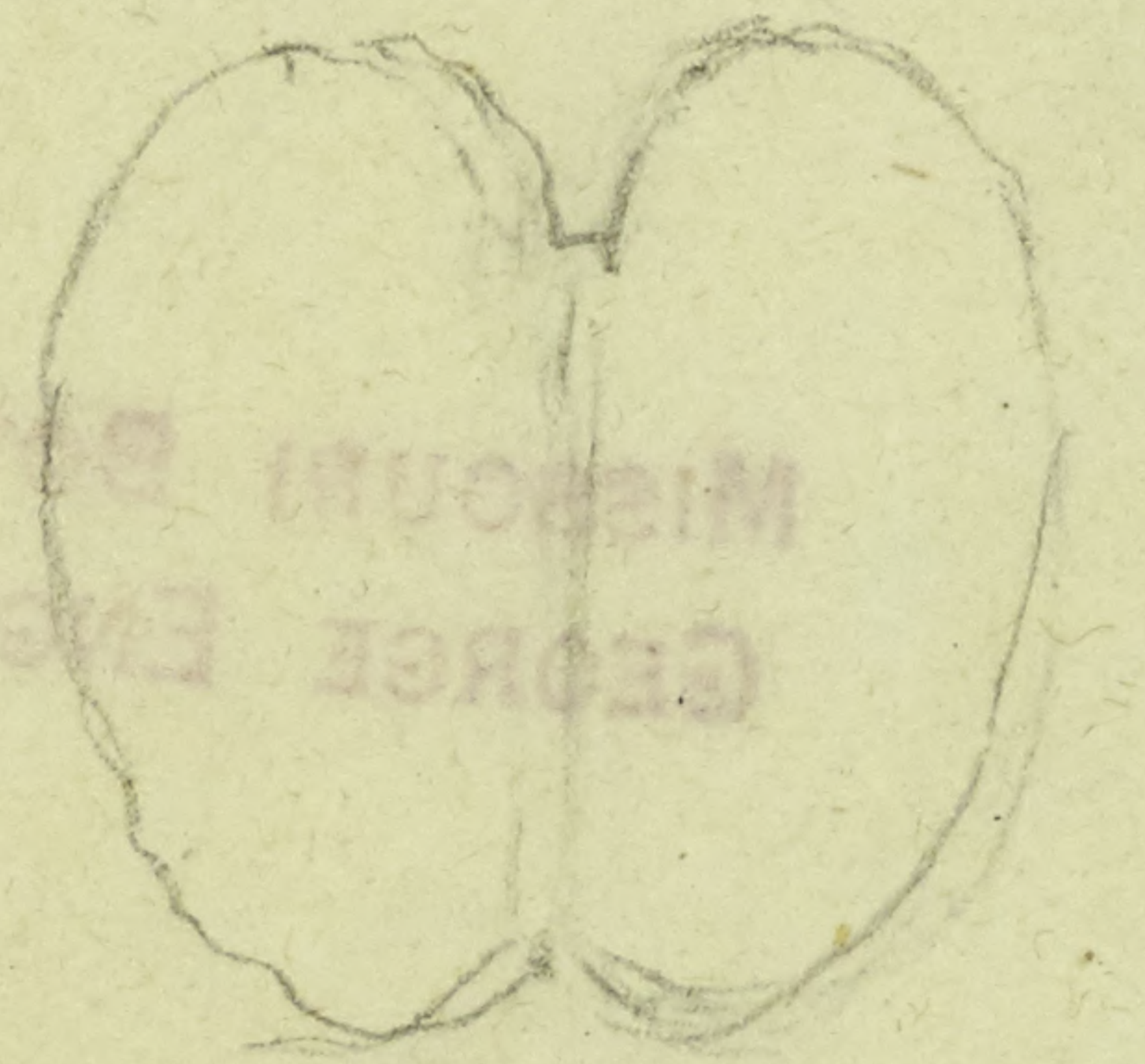
Call. heterophylla March 16 1865
forma submersa linearis
Deerfield Mass
in Hb Torr

840



$\frac{23 \times 20}{30}$

= 0.8 × 0.7 mm



$\frac{24 \times 24}{30}$

0.8 × 0.8 mm

fruits from same specimen

ALEX. LEITCH,
APOTHECARY & PHARMACEUTIST,
Marble Building Cor. Fourth & Olive Sts. St. Louis, Mo.

0 1 2 3 4 5 6 7 8 9 10
cm
copyright reserved
MISSOURI
BOTANICAL
GARDEN

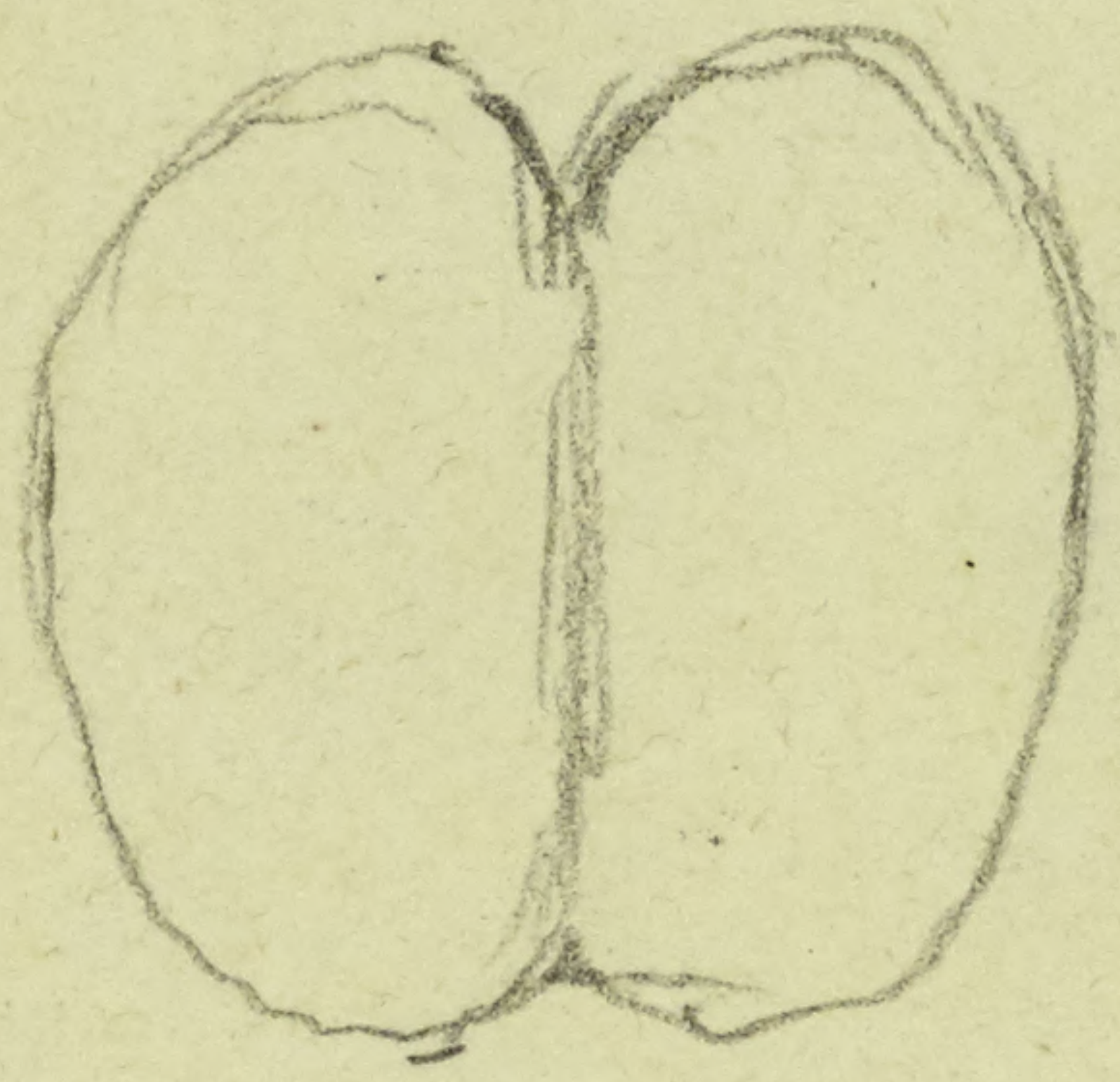
Call. heterophylla
forma genuina

Mars

Branch of Blanco River, Texas

Ch^s Wright

in Hb Torr



0.8 x 0.8 mm

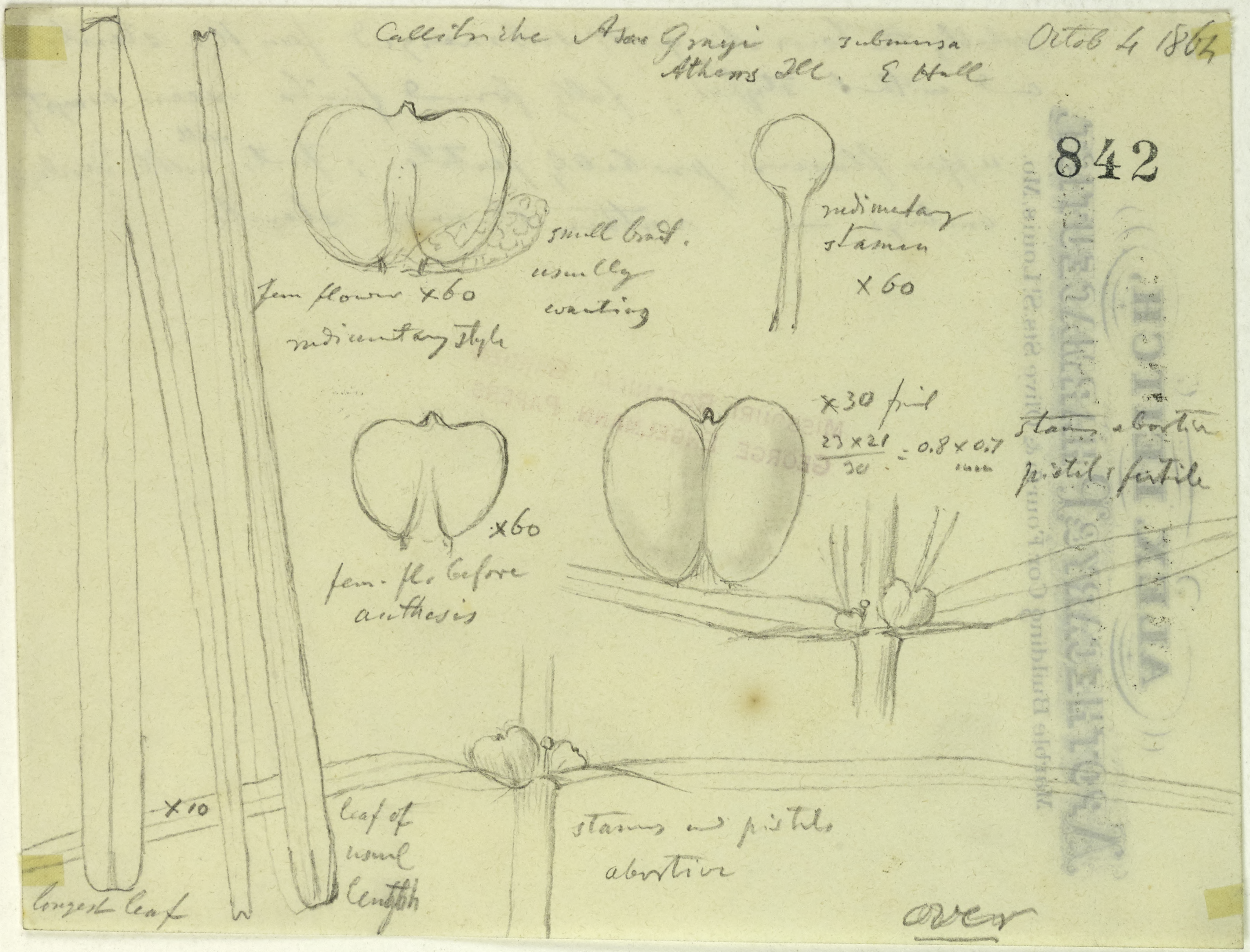
841

ALEX. LEITCH,
APOTHECARY & PHARMACEUTIST,
Marble Building Cor. Fourth & Olive Sts. St. Louis, Mo.

0 1 2 3 4 5 6 7 8 9 10
cm
copyright reserved
MISSOURI
BOTANICAL
GARDEN

Callitriche Asa Grayi submersa Octob 4 1864
Athens Ill. E Hall

842


fem flower x60
rudimentary style
small bract.
usually
wanting
rudimentary
stamen
x60
x60
fem. flo before
anthesis
x30 fruit
23×21 / 30 = 0.8×0.7 mm
stamens abortive
pistils fertile
x10
longest leaf
leaf of
usual
length
stamens and pistils
abortive

over

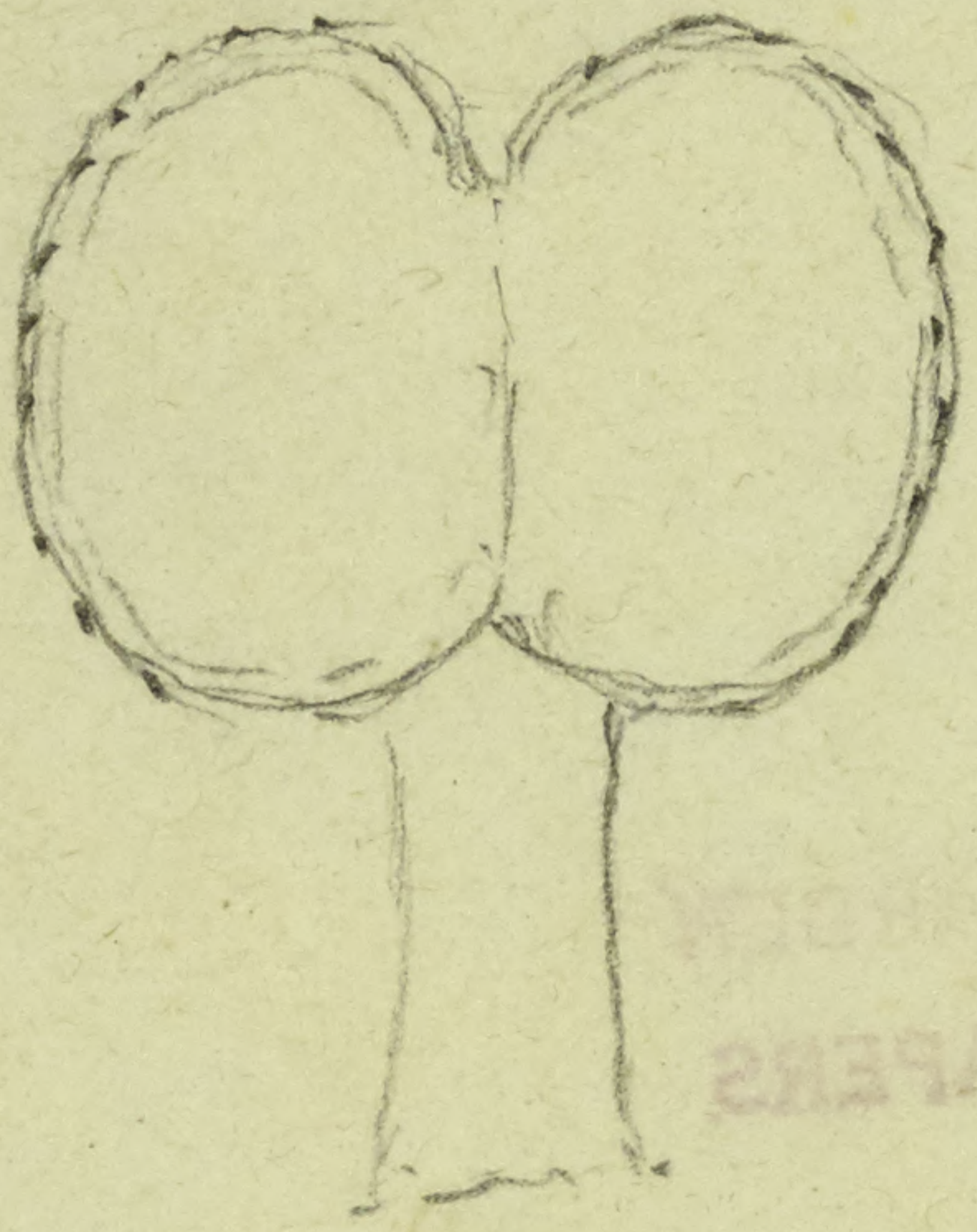
ALEX. LEITCH,
APOTHECARY & PHARMACEUTIST,
Marble Building Cor. Fourth & Olive Sts. St. Louis, Mo.

probably the lowermost quite submerged fem. fl. sterile and without styles; fully formed fruits seem empty; upper flowers probably fertile; fruits with well developed embryo — anthers always sterile

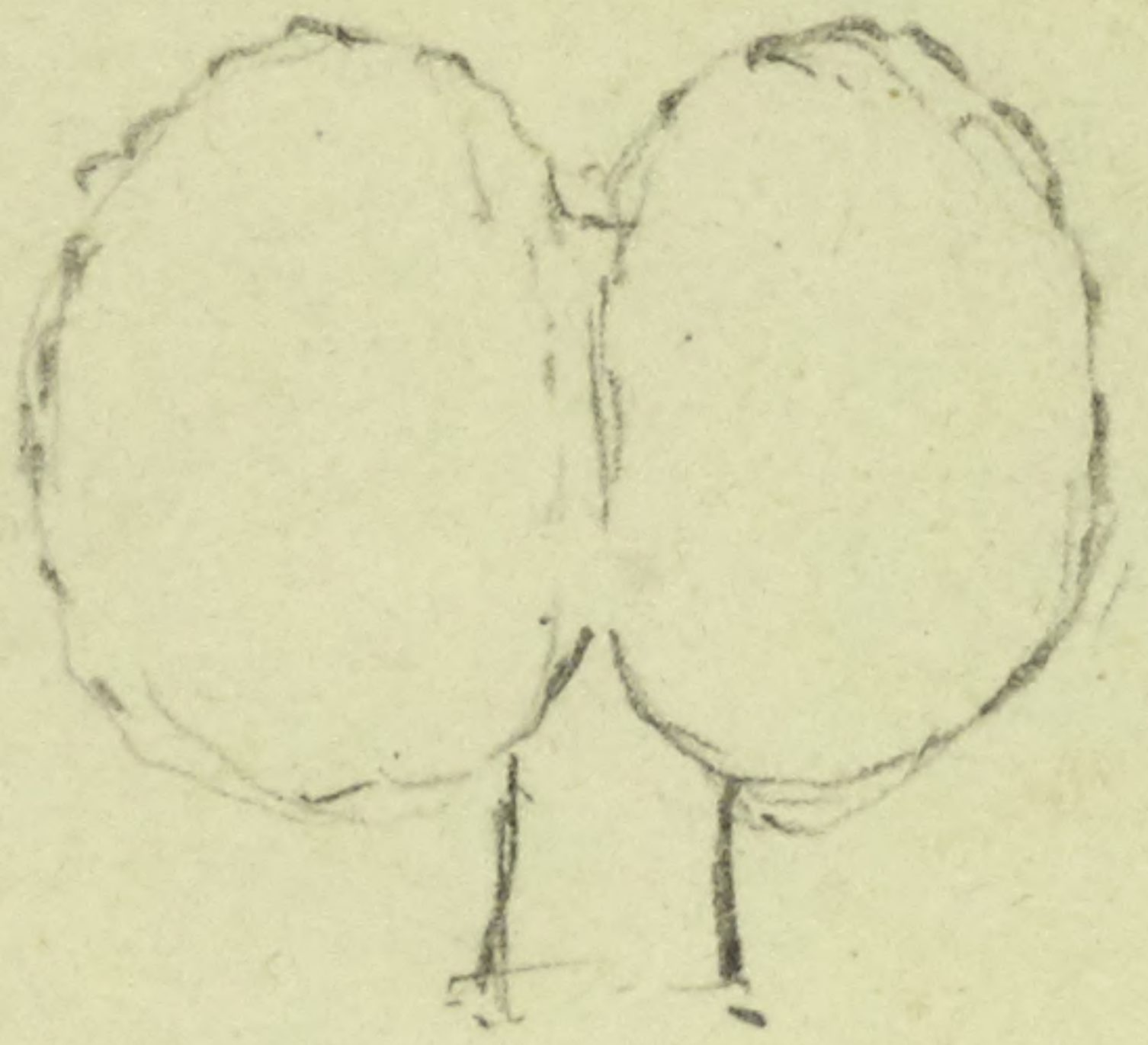
Callitriche Austini March 14 1865

Louisiana Dr Hale in Herb Torrey

x 30



other specimens have peduncles of ordinary length



wet woods
Ohio Lea
in Herb Torrey

843

0 1 2 3 4 5 6 7 8 9 10
cm copyright reserved
MISSOURI BOTANICAL GARDEN

ALEX. LEITCH,

APOTHECARY & PHARMACEUTIST,

Marble Building Cor. Fourth & Olive Sts. St. Louis, Mo.

843A

25-30

Callitriche Austini Engelm.
C. pedunculosa Nutt in Herb Drumm — ex parte
C. deflexa var A. Braun apud Hegelmaier

interrupted descent and ascent took place from January to December, we find in 1862 some interruptions in the steps of that ladder. The electricity in February, 1862, is about four degrees higher than that of January, April somewhat higher than March, and July is the lowest instead of September in 1861. These trifling irregularities may be accounted for by differences in temperature and relative humidity, and by a greater number of thunderstorms in 1862. January of 1862, for instance, was so unusually rainy, that its relative humidity too was unusually high, diminishing thus electricity. But the general features of distribution of electricity throughout the year are apparent in both years, and we may in that respect divide the twelve months of each year into two or three groups. Computing the months which give the highest electricity and those which give the lowest in each year, we find that in both years the months of January, February, March, April, November and December exhibit the highest, and the months of May, June, July, August, September and October the lowest electricity. The first group gives

The aggregate monthly mean of	71.5	degrees of	electricity	in 1861
and	74.6	"	"	" 1862
While the second group gives	29.0	"	"	" 1861
and	25.7	"	"	" 1862

The second group prevailed therefore in 1861, and the 1st in 1862.

Or we may divide the twelve months of each year into three groups. The first group with the highest electricity is formed by the months of January, February, November and December; the second with a mean electricity by the months of March, April, May and October; and the third with the lowest electricity by the months of June, July, August and September.

The aggregate monthly mean of

The first group	in 1861	is 52.9—	in 1862,	54.6
The second "	"	33.5	"	35.2
The third "	"	14.1	"	10.5

Thus in 1861 the third group prevailed, and in 1862 the first and second. But these differences are so well balanced throughout the year, that the mean of the whole year in 1861 and in 1862 is exactly the same, namely, 8.4. Such an identity in the yearly result, even to decimals, is of course not to be expected every year; but it seems to prove, at least, that the yearly mean of electricity is as constant as that of temperature, of relative humidity, and of atmospheric pressure.

The third table, showing the daily periodicity of atmospheric electricity, confirms the daily two maxima and two minima of electricity as an undeniable fact.

~~Callitriche Nuttallii Torr~~
~~heterophylla Nutt [illegible]~~
~~deflexa A. Braun [illegible]~~
~~C. [illegible] Austini~~

VI. The appearance of negative electricity was connected in

1861. No. times.	1862. No. times.	
30	32	with thunderstorms.
23	28	with rains without thunder and lightning.
20	4	with dry storms (without rain and without thunder and lightning).
4	3	with snow.
1	0	with fog.
78	67	

VII. *Relation of Rain and Snow to Electricity.*

Rain without thunderstorm was accompanied

	By Positive Electricity.		By Negative Electricity.		By no Electricity.	
	In 1861.	In 1862.	In 1861.	In 1862.	In 1861.	In 1862.
January	7	5	3	2	......	2 ......
February	2	1	4	1	......	......
March	......	5	6	4	......	......
April	8	6	7	11	......	1 ......
May	10	7	1	1	3	1 ......
June	7	1	......	......	......	3 ......
July	2	4	......	......	......	3 ......
August	3	......	1	......	1	2 ......
September	4	......	......	1	4	8 ......
October	3	1	1	1	7	1 ......
November	2	3	......	7	......	7 ......
December	2	3	......	......	......	6 ......
	50 + el.	36 + el.	23 — el.	28 — el.	15 no el.	34 no el.

Snowing was accompanied

	By Positive Electricity.		By Negative Electricity.		By no Electricity.	
	In 1861.	In 1862.	In 1861.	In 1862.	In 1861.	In 1862.
January	3	9	......	2	......	......
February	12	8	......	1	......	......
March	3	12	......	......	......	......
October	......	1	......	......	......	......
November	......	4	......	......	......	......
December	5	2	2	......	......	1 ......
	23 + el.	36 + el.	2 — el.	3 — el.	......	1 no el.

REMARKS.

The monthly mean of atmospheric electricity in 1862 was not quite so regular as that in 1861. While in 1861 an un-

6/115
2.0

MISSOURI BOTANICAL GARDEN
GEORGE ENG

0 1 2 3 4 5 6 7 8 9 10
cm
copyright reserved
MISSOURI
BOTANICAL
GARDEN

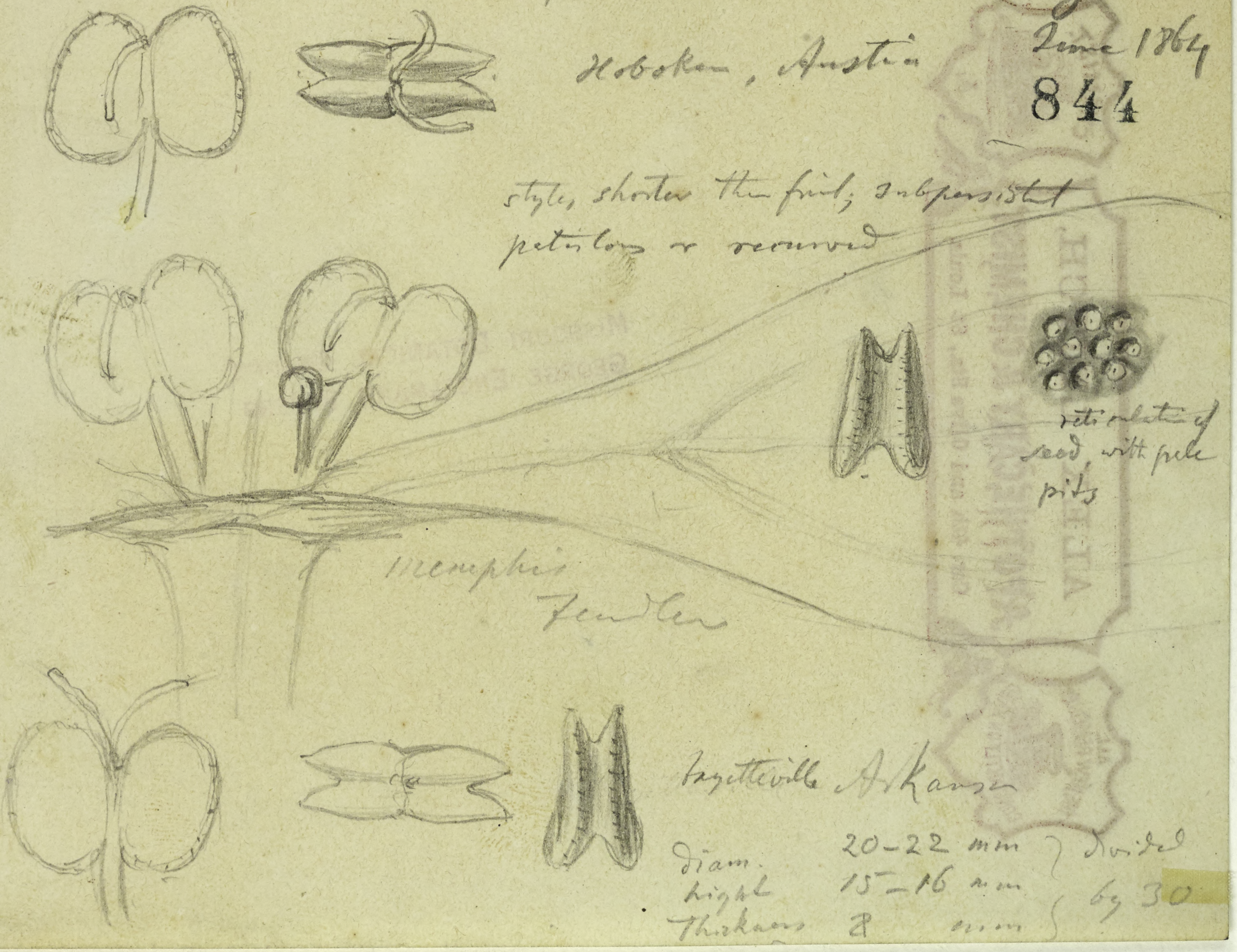
x30

Callitriche Engelmanni Austin
C. deflexa A Braun apud Hegelm

Hoboken, Austin

June 1864

844



styles shorter than fruit; subpersistent
patulous or recurved

reticulation of
seed with pale
pits

Memphis
Fendler

Fayetteville Arkansas

diam. 20-22 mm
hight 15-16 mm
Thickness 8 mm
} divided by 30

cm
copyright reserved
Missouri Botanical Garden

CHEMIST
A

ALEX. LEITCH,
APOTHECARY & CHEMIST,
Cor. 4th and Olive Sts., St. Louis.

ALL
THE NEW REMEDIES
CONSTANTLY ON HAND

Sept 14"

Callitriche

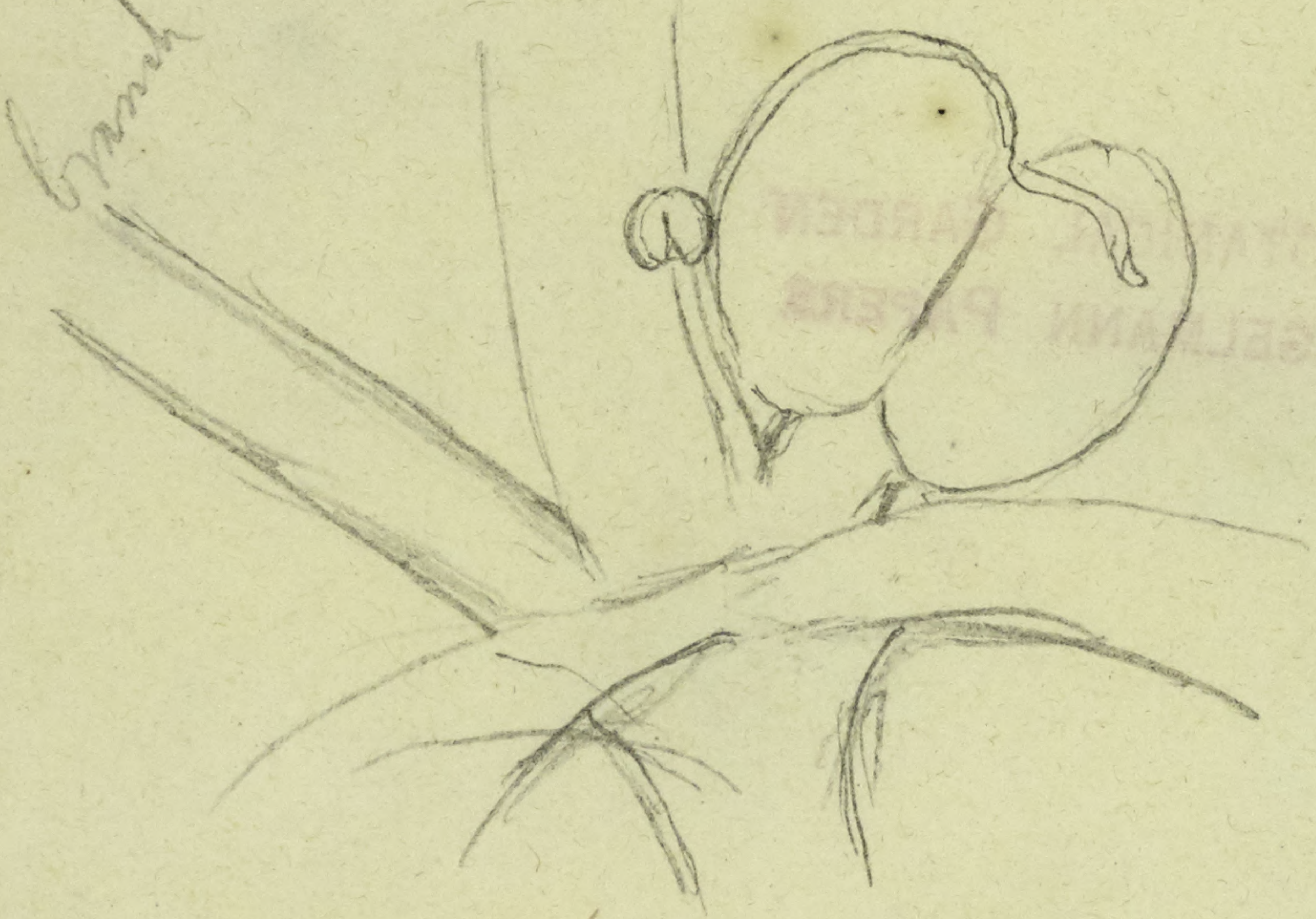
South America

Baldwin

ex Herb Schweinitz

in Hb Acad Phil

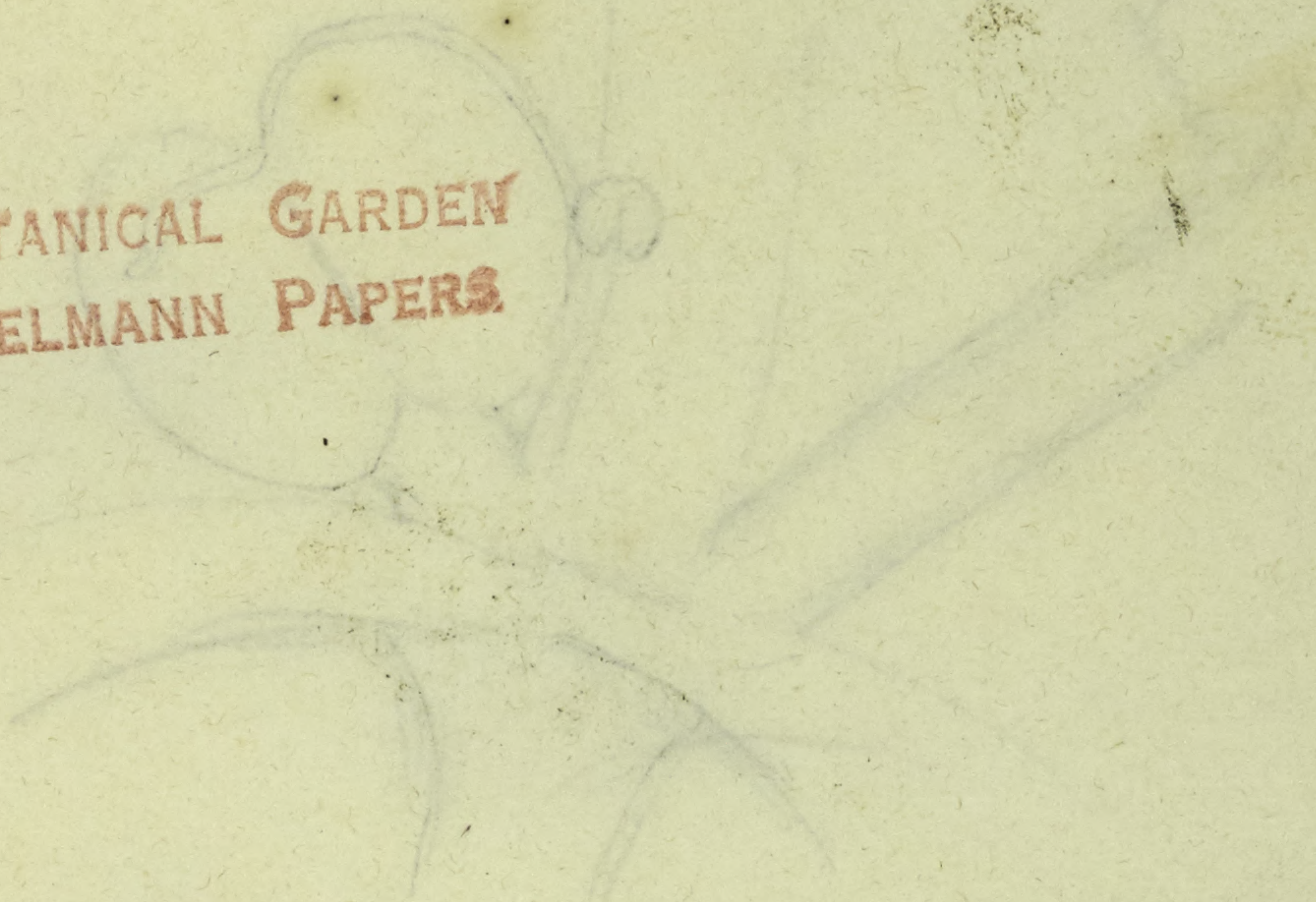
x30



845

0 1 2 3 4 5 6 7 8 9 10
cm copyright reserved
MISSOURI BOTANICAL GARDEN

ALEX. LEITCH,
APOTHECARY & PHARMACEUTIST,
Marble Building Cor. Fourth & Olive Sts. St. Louis, Mo.

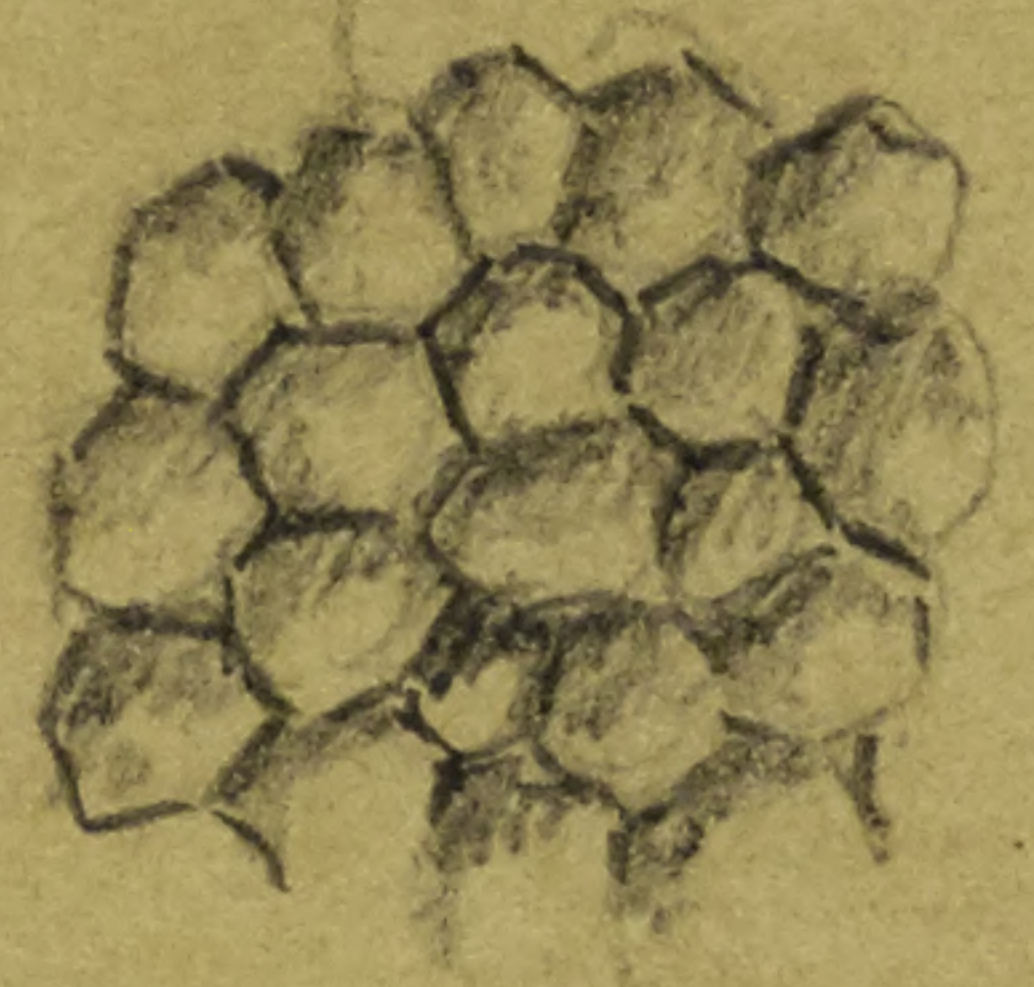


Callitriche Austini

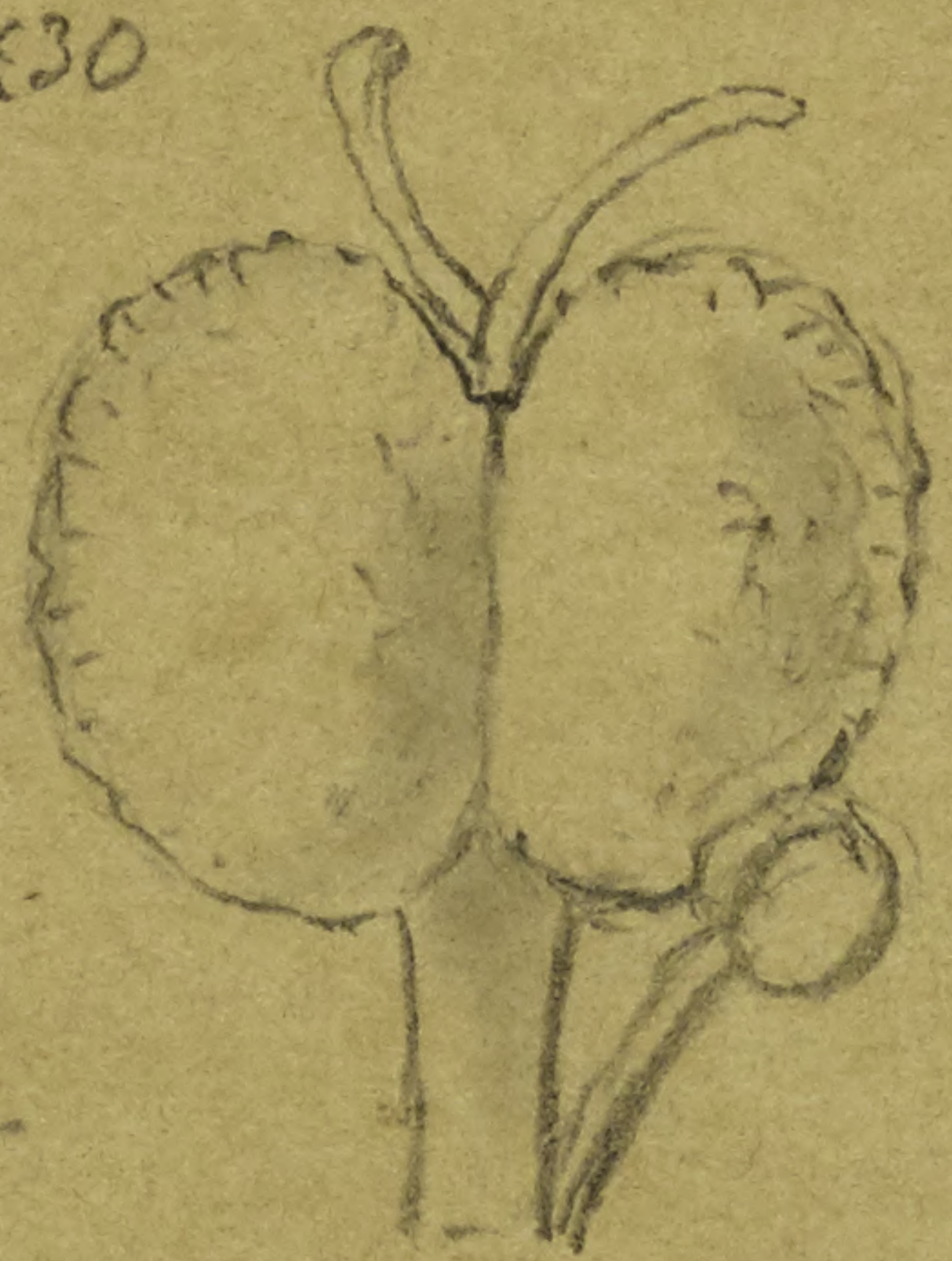
Nov 6. 1864

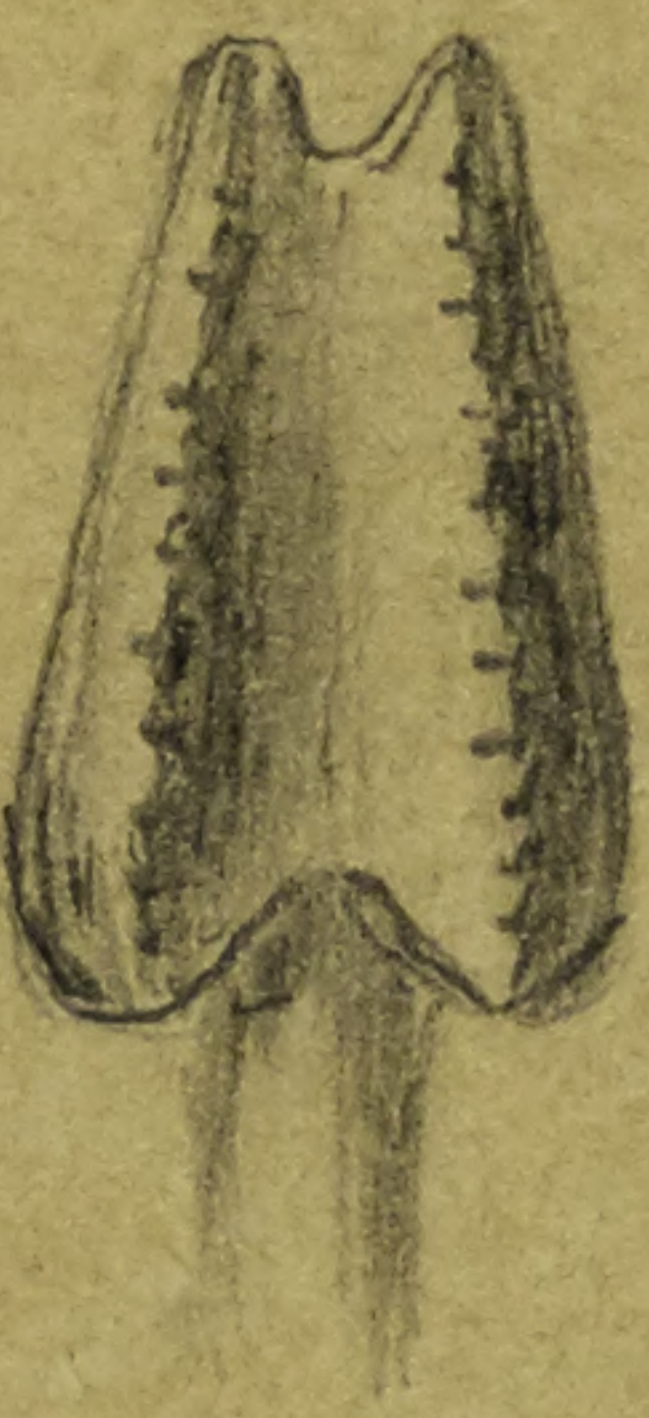
Palisades N.Y. Austin 1864

x 150



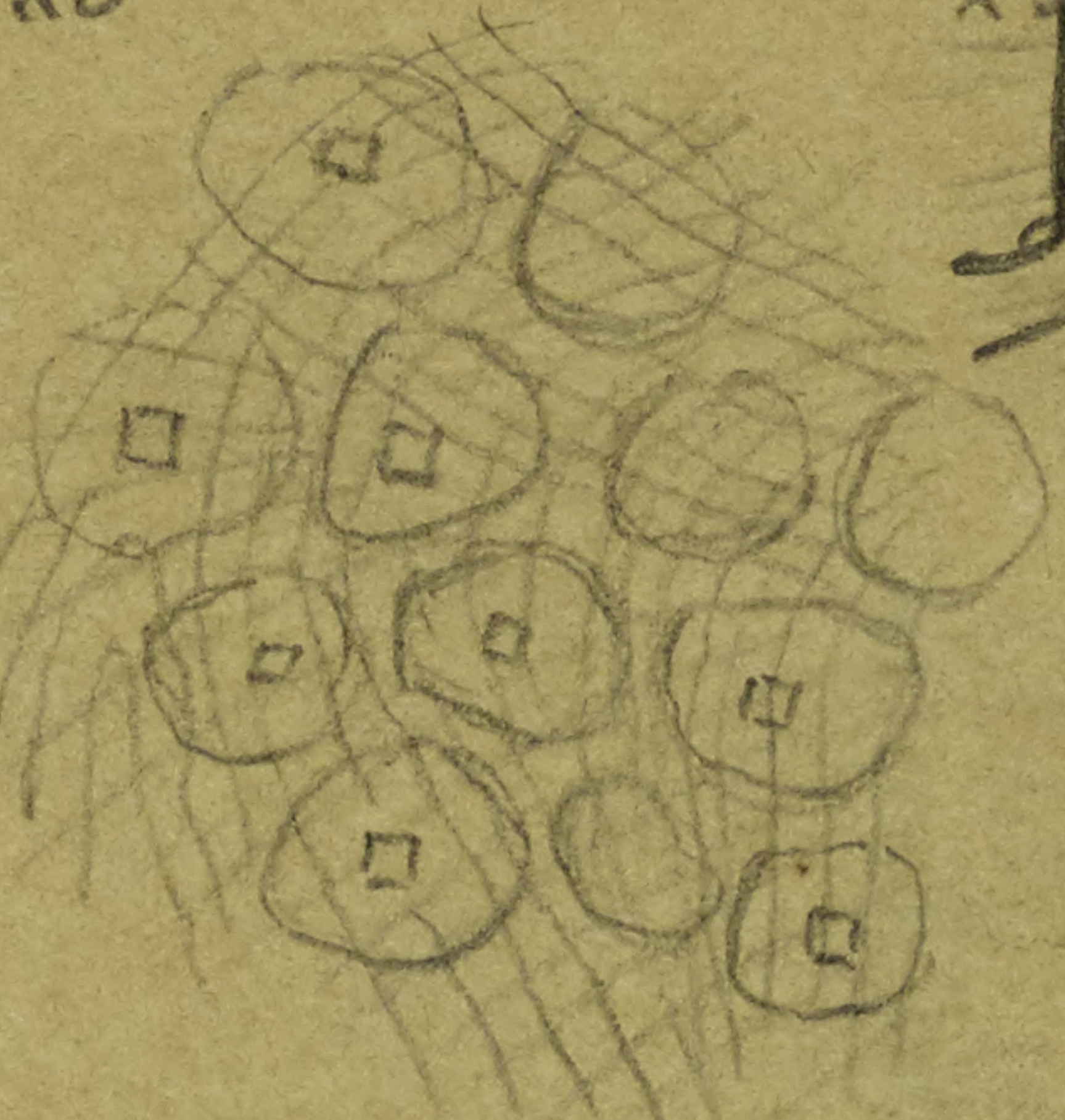
x30



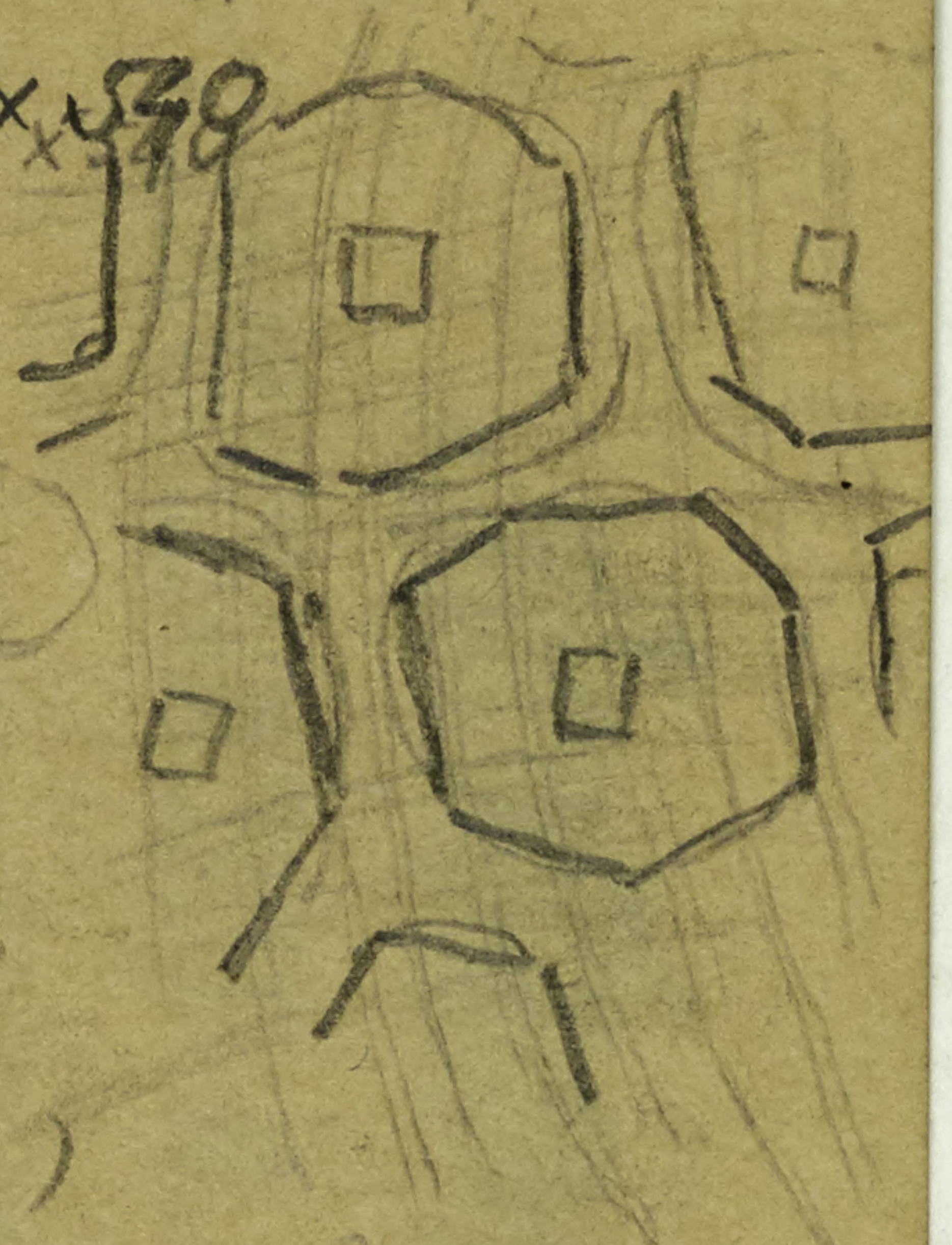


$$\frac{21 \times 16}{30} = 0.7 \times 0.5 \text{ mm}$$

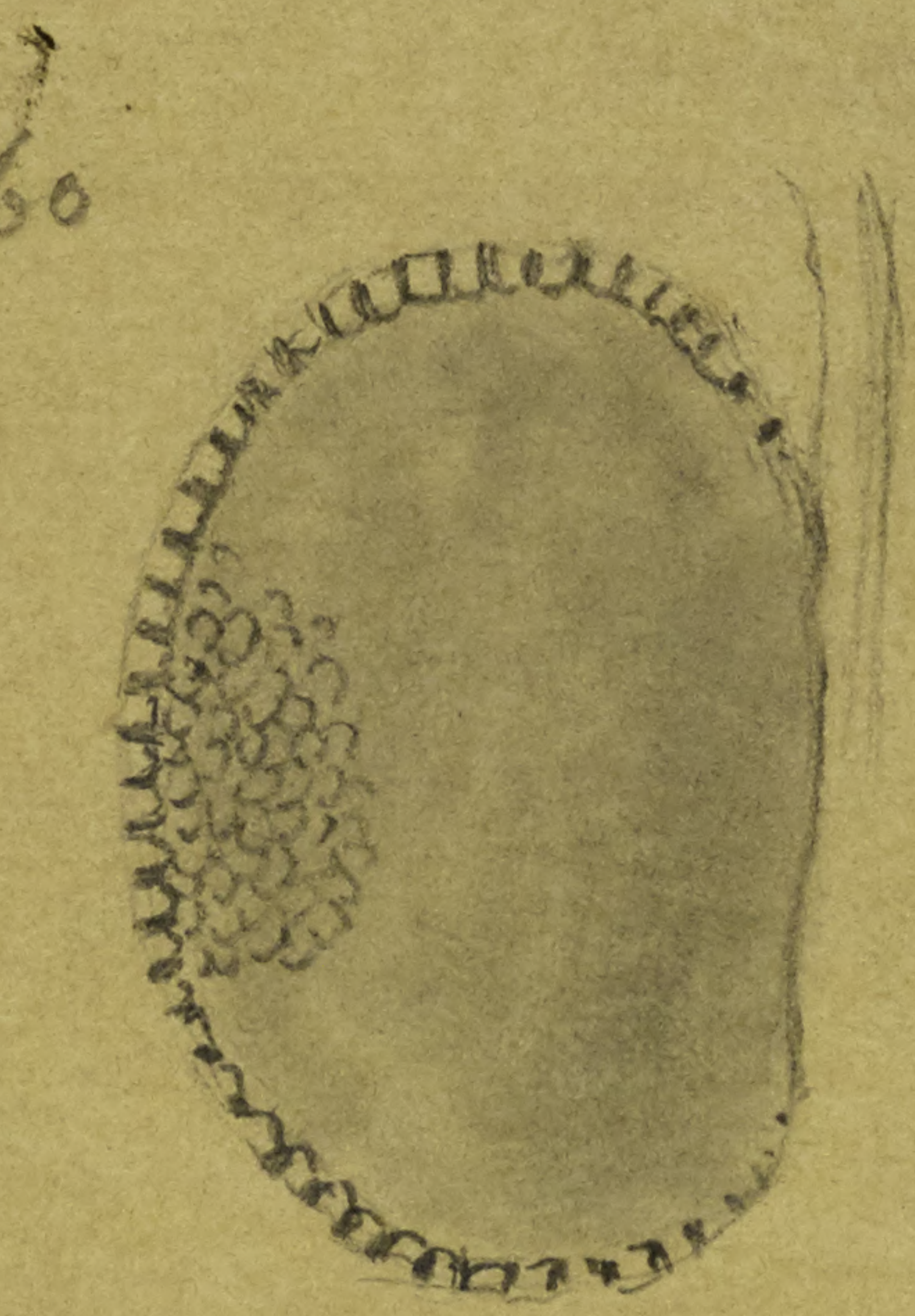
x 280



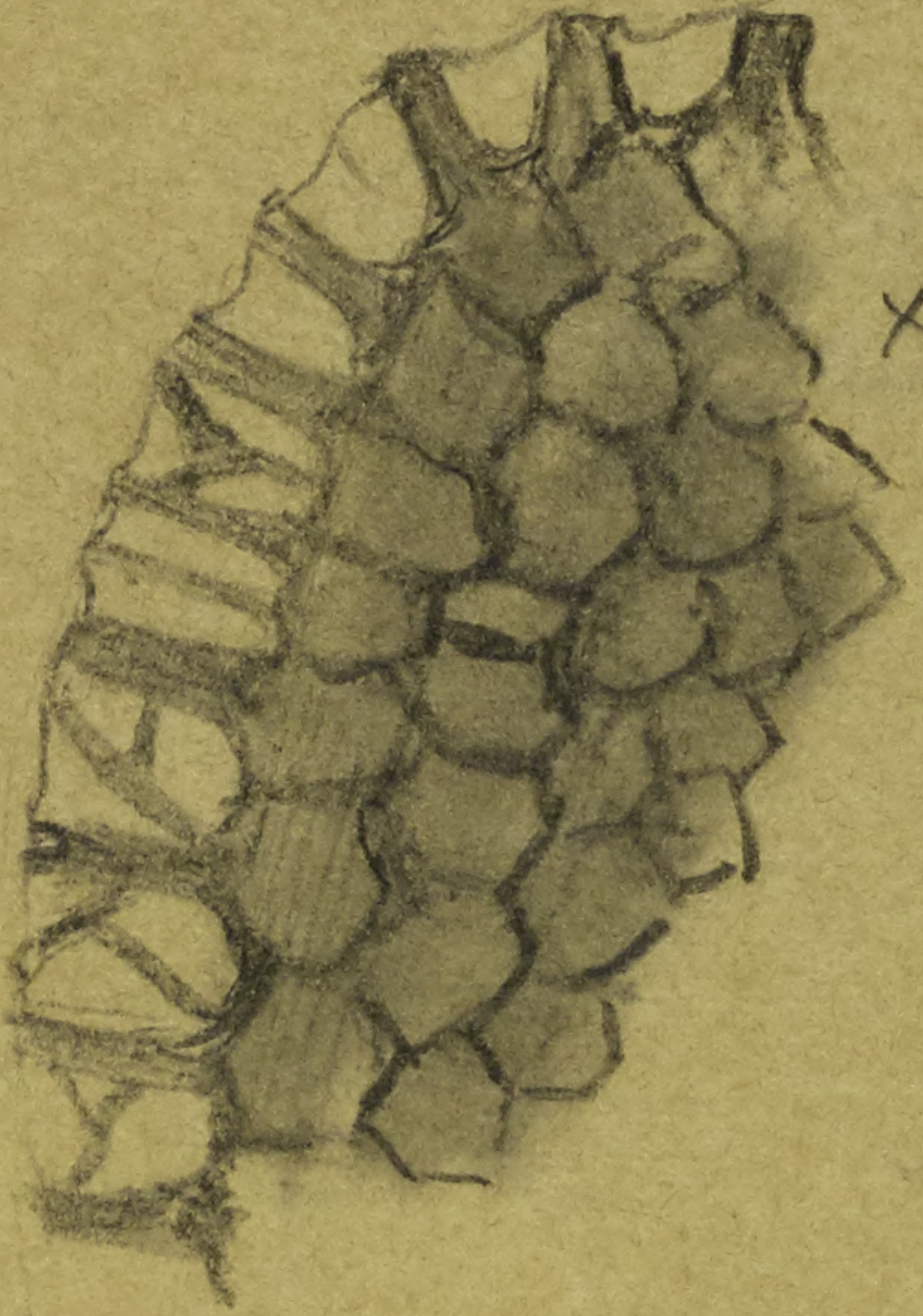
x 540



x60



x 150



(Dec 5)

Surface parenchyma of unripe fruits _ cells with or without small crystals; curious system of cross fibres, isolated, where the cells are torn off _ what is it?

They are the fibre cells of the

846

Alex. Leitch,
APOTHECARY & CHEMIST,
Cor. 4th. & Olive Sts., St. Louis.

copyright reserved
MISSOURI
BOTANICAL
GARDEN